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MASSACHUSETTS WATER RESOURCES COMMISSION

GOVERNMENT DOCUMENTS
COLLECTION
FEB 21 1978
University of Massachusetts

FISCAL YEAR 1977

ANNUAL REPORT

GOVERNMENT DOCUMENTS
COLLECTION
University

**Massachusetts
Division of Water Resources**

DIVISION OF WATER POLLUTION CONTROL

OFFICE OF THE DIRECTOR
DIVISION OF WATER RESOURCES

The Commonwealth of Massachusetts
Water Resources Commission
Leverett Saltonstall Building, Government Center
100 Cambridge Street, Boston 02202

December 22, 1977

A. Hunter Rineer
State Librarian
State House
Boston, MA 02133

Dear Mr. Rineer

The Massachusetts Water Resources Commission hereby transmits its Fiscal Year 1977 Annual Report as required by Chapter 78, Section 19C of the General Laws.

The Commission report includes that of The Division of Water Resources and Division of Water Pollution Control.

Respectfully yours,

Richard E Kendall
Richard E. Kendall
Co-Chairman

David Standley
David Standley
Co-Chairman

REK/DS/JC/ec

The Commonwealth of Massachusetts
Leverett Saltonstall Building
Government Center
100 Cambridge Street, Boston, 02202

ANNUAL REPORT
to the
MASSACHUSETTS WATER RESOURCES COMMISSION
by the
Director and Chief Engineer
Division of Water Resources
for the
Fiscal Year Ending - June 30, 1977

PUBLICATION #9926-25-100-9-77 CR
APPROVED by Alfred C. Holland, State Purchasing Agent

INTRODUCTION

Chapter 21, Section 8 of the General Laws of the Commonwealth, enacted in 1956, established the existence, the duties and the jurisdiction of a Water Resources Commission under whose supervision and control would be the Division of Water Resources. Subsequently, in 1966, Chapter 685 established a Division of Water Pollution Control as the second operating agency of the Commission. The current make-up of the Commission was instituted pursuant to Chapter 706, of the Acts of 1975, which extensively amended Chapter 21.

The mandates were clear The Commission was charged with the responsibility for the study of the needs, supplies and resources of the Commonwealth with respect to private and public use of water, water conservation and flood damage prevention

This report intends to summarize the progress by the Division of Water Resources during Fiscal Year 1977, in response to those mandates.

Supervisory responsibility for the Division is incorporated in the following individuals who constitute the Water Resources Commission as of June 30, 1977.

Co-Chairman - Richard E. Kendall, Commissioner
Department of Environmental Management

Co-Chairman - David Standley, Commissioner
Department of Environmental Quality Engineering

Department of Food & Agriculture Representative -
Frederick Winthrop, Jr., Commissioner

Designee: Myron A. Maiewski, Assistant Commissioner
Department of Food & Agriculture

Department of Commerce & Development Representative
John J. Marino, Commissioner

Designee: William Sugrue (Interim)
Department of Commerce & Development

Department of Fisheries, Wildlife & Recreational Vehicles Representative
Bruce Gullion, Commissioner

Department of Metropolitan District Commission Representative
John Snedeker, Commissioner

Designee: Francis D. Faucher, Assistant Director
Water Division
Metropolitan District Commission

Public Members - Peter C. Karalekas
322 Prospect Street
East Longmeadow, Ma 01028
Appointment expires - 11/29/77

Alan S. Murphy, Jr
85 Kingswood Dr.
Westwood, Ma 02090
Appointment expires - 12/15/78

Richard Noss
106 Centre Street
Milton, Ma. 02186
Appointment expires - 11-29-79

Rita Barron
76 Walden Street
Newtonville, Ma. 02160
Appointment expires - 11/29/78

PERSONNEL OF THE DIVISION (as of June 30, 1977)

Kennedy, Charles F.	Director & Chief Engineer
Pyle, O. Fletcher	Associate Civil Engineer
Doucette, Thomas F.	Associate Civil Engineer
Chandler, Emerson H.	Chief Planner
Beshara, Michael L.	Principal Civil Engineer
Krol, William A.	Senior Civil Engineer
Shapiro, Sheldon	Principal Civil Engineer
Maguire, Kevin B.	Senior Civil Engineer
White, Paul F.	Resources Planner
Bones, William F.	Resources Planner
Connor, Joseph M.	Assistant Planner
Hardin, Meriel N.	Resources Planner
Rawls, Margaret	Land Use Administrator
Wineman, Janet J.	Principal Planner
Tamulonis, Ronald	Senior Civil Engineer
Hazel, William I.	Assistant Civil Engineer
Daniels, John H.	Land Use Administrator
Grice, David	Resources Planner
Levine, Nathan R.	Senior Civil Engineering Draftsman
Goldman, Charlotte	Senior Clerk Typist
Hayward, David F.	Principal Right-of-Way Agent
Struzziero, Ernest J.	General Construction Inspector
Kilner, Suzanne M.	Land Use Administrator
Everberg, William M.	Senior Civil Engineering Draftsman
Tanzer, Philip	Senior Statistical Clerk
DiCesare, Richard	Senior Bookkeeper
Brosnahan, Helen R.	Principal Clerk
Mathews, Barbara A.	Junior Clerk Typist
Connell, Evelyn	Junior Clerk Typist

ADMINISTRATIVE APPROPRIATIONS

Fiscal Year	Appropriation
1959	$ 70,800
1960	75,915
1961	79,475
1962	88,920
1963	117,402
1964	129,649
1965	139,181
1966	140,573

Administrative Appropriations - continued

Fiscal Year	Appropriation
1967	127,946
1968	153,411
1969	190,412
1970	174,705
1971	202,740
1972	213,808
1973	227,300
1974	247,899
1975	259,854
1976	262,155
1977	345,000

In addition, the following sums were appropriated for the operation of Interstate Flood Control Commission:

Connecticut River Valley Flood Control Commission	$ 35,575.00
Merrimack River Valley Flood Control Commission	111,925.00

These funds were used for the payment of the Commonwealth's share of operating the respective Flood Control Commissions and the annual tax and economic losses to the upstream states caused by the construction of flood control reservoirs.

Other Major Appropriations:

Water Planning	$ 48,907.00
Flood Control	108,244.00
P.L. 566 Maintenance	33,000.00
Federal Cooperative Studies	137,000.00
New England River Basins Commission	44,483.00
Ipswich River Watershed District	1,000.00

TOTAL BUDGET APPROPRIATION

Fiscal Year	Appropriation
1977	$ 865,134.00

Regional Interstate Comprehensive Water and Related Land Resource Planning

Interstate studies were conducted during FY 77 which involved the Commonwealth, other states and Federal Agencies. Most of these studies were under the leadership of the New England River Basins Commission, or the New England Division of the U. S. Army Corps of Engineers.

Two major reports were completed, The River's Reach (Connecticut River) and The Merrimack Water Supply Project Technical Report. The River's Reach, a 292 page document, presents a unified program for flood plain management in The Connecticut River Basin, and amends the NERBC 1980 Connecticut River Basin Plan. Basically, the study grapples with alternatives to the structural flood control measures originally proposed, but which now are seen to be unfeasible because of political, environmental and economic factors.

While plans for large upstream dams have been put aside, the raising of dikes to protect Springfield, West Springfield and Hartford is still a possibility. While the present dikes offer a high degree of protection, they would be overtopped by a flood of the magnitude of the Standard Project Flood. In this event, losses would be catastrophic.

The River's Reach, therefore, recommends that an additional study, now ongoing, determine if dike raising is economically or otherwise justified, and if the cities themselves find the present level of risk unacceptable. Upon completion of these studies, Chicopee, Holyoke and Northampton, also behind dikes, may wish to re-evaluate their position.

Non-structural alternatives examined by the study include improved flood warnings, relocation and flood proofing, regulation, flood insurance, land acquisition, maintenance of agriculture and guidance of growth. The issues of leadership and implementation responsibilities, and cost-sharing approaches are discussed.

The study concluded that the success of a comprehensive non-structural program may well hinge on the availability of Federal financial assistance under Section 73 of the Water Resources Development Act of 1974, PL. 93-251. With a maximum non-federal share of only 20 percent, it is an attractive proposition for the states. The workability of this approach must be demonstrated at the Federal level.

The study, therefore, recommends that special "Section 73" demonstration studies be conducted "... to develop the data and methodology needed to satisfy the Office of Management and Budget's restrictions about planning cost effective flood plain management programs."

While the River's Reach was produced by a state-federal team with formal participation by Division of Water Resources personnel on the Coordinating Group and Study Management Team, the Merrimack Study was primarily conducted by the Corps of Engineers, New England Division, Water Resources personnel participated in study briefings, discussions of preferred alternatives and in the review of various draft materials. Participation by the Metropolitan District Commission and The Division of Fisheries and Wildlife was also obtained.

The Merrimack River Water Supply Project Technical Report, January, 1977, was produced in compliance with the larger Northeastern United States Water Supply Study (NEWS) authorized by Congress under Title I of Public Law 89-29, enacted on 27 October 1965.

Built upon a base of prior water planning reports, the study describes the basin and its resources, its problems and needs. It formulates short and long range water supply alternatives, including non-structural elements such as demand reduction, desalination, recycling, as well as structural additions to water supply. The Sudbury River, Merrimack Mainstem, and Plymouth County Groundwater Sources appear to be worthy of future considerations, but desalination and importation from the Connecticut Basin, beyond the proposed Northfield and Millers River developments, do not rank favorably as long term water supply solutions for eastern Massachusetts

The report concludes " . . That water demand modification - through consumer education and the increased use of water-saving appliances - are cost effective and should be considered components of any plan designed to meet the long term needs of the eastern Massachusetts region."

A New England Perspective on Flood Plain Management (2 volumes) was completed to draft stage during the year. Produced with Division of Water Resources staff participation as a member of the NERBC Task Force on Floodplain Management, the report is intended to be an element of the Comprehensive Coordinated Joint Plan for New England pursuant to The Water Resources Planning Act of 1965.

The study is aimed to provide a unified approach to floodplain management in keeping with the recent Presidential Order "to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains."

The Plan of Work for the Pawcatuck Narragansett Bay Urban Study received Washington approval early this past year. As a result, work on most study elements is well underway. The Massachusetts portion of this study includes a rigorous examination of urbanized watershed area needs in the areas of flood plain management and water supply. Acceptable, implementable solutions to these serious problems will be the end product of this joint Federal/State effort.

Reports, Publications and Documents FY 1977

U. S. Department of Agriculture and Massachusetts Water Resources Commission, Inventory of Potential and Existing Upstream Reservoir Sites Sudbury, Assabet, and Concord Study Areas, October, 1976, 87 pages.

U. S. Department of Agriculture and Massachusetts Water Resources Commission, Water and Related Land Resources of the Berkshire Region, Amherst, 1977.

New England River Basins Commission, Task Force on Flood Plain Management, (with participation by the Division of Water Resources), New England Perspective on Flood Plain Management, Vol. II, Assessment of Flood Plain Management Activities in New England, June 30 1977.

New England River Basin's Commission, (with Division of Water Resources participation), The River's Reach, A Unified Program for Flood Plain Management in The Connecticut River Basin, December, 1976,

State Planning and Accomplishments

State water planning activities during Fiscal 1977 can be classified in four general categories: basic data acquisition, regional resources evaluations, Level B and C studies led by the New England River Basins Commission or federal agencies, and overall water plan/policy studies led by the Executive Office of Environmental Affairs.

Basic data gathering, including rainfall recording, stream gaging, snow surveys and flood monitoring, continued routinely as required to provide the necessary foundation for detailed water supply and flood control planning. No new stations were acquired during the year but the Commission continues to operate a system of rainfall stations, the total number of rainfall stations remaining at 199 in Massachusetts The position of State Climatologist was established in the Division of Water Resources to maintain statistical records on general weather conditions. Although the position is not funded, Division personnel keep the records up-to-date on a part-time basis. The rainfall for calendar year 1976 is shown and compared with the normal rainfall. This service is valuable to engineers, students, architects, and the legal profession.

Regional resource studies may be based primarily on watersheds, groups of watersheds, or in some cases, groups of towns. A listing of such studies or planning activities includes the following:

Ipswich River District Water Supply

The firm of Metcalf and Eddy Inc. has been engaged by the Ipswich River Watershed District Commission in cooperation with the Massachusetts Water Resources Commission to investigate appropriate methods of management of the Ipswich River water supply by regulation and allocation of its groundwater well supplies and surface water flow. The study shall include a review of the presently authorized withdrawals from the Ipswich River. This data would permit an evaluation of the optimum location, amount and timing of withdrawals to meet the needs of the year 2000 for each community and would provide a sound basis for allocation or reallocation of available stream flow. Finally, recommendations for any follow-up studies needed to formulate a program for developing the necessary additional supplies for the year 2000 would be made based on the allocation plan presented.

Wetlands Restriction Program

During Fiscal Year 1977 the staff of the Wetlands Restriction Program was enlarged and re-organized in an effort to expedite the implementation of M. G. L. 131/40A and M. G. L. 130/105. Field personnel were assigned responsibilities for communities in the Nashua River, Charles River and Barnstable County areas. The inland program is continuing, while the coastal program should be strengthened with funding from the Coastal Zone Management program. In addition, a staff member is now working on the Scenic Rivers program.

The problem of flood plain mapping in consideration of the 1974 amendment to the Inland Wetlands Act was resolved in the Charles River Watershed by limiting the restrictions to wetland mapping. The Corps Natural Valley Storage areas, when completed, would cover the largest areas of flood plains. The contracts for wetland mapping in the Charles and Nashua Watershed were awarded to Resource Mapping Systems, Inc., during March and April. In the Nashua, both wetland and flood plain areas will be placed under restriction.

The accomplishment of the staff for Orders of Restriction during FY 77 included the following: recordings completed, Orleans and Newton; hearings held Newton, Marlborough, Millis, Norfolk, Chatham, Weston, and Sherborn; preparation for hearings, Provincetown, Dennis, Brewster, Holliston, Natick and Wrentham.

Cape Cod Hydrologic and Other Ground Water Studies

The comprehensive study of ground water resources of Cape Cod, Massachusetts, continued during FY 77. Fieldwork is essentially complete and an atlas report is in progress as is construction and verification of the digital model. The four year, $700,000 study funded jointly by Barnstable County, the Massachusetts Water Resources Commission, USGS, and the National Park Service is being performed by the USGS. The Massachusetts Water Resources Commission will continue administration of the funding and conduct of the study through close coordination with USGS, the Barnstable County Commission and the local Barnstable County Task Force toward the objective of testing alternative methods of developing and managing the ground water of Cape Cod. The study is scheduled to be completed by the end of FY 78.

Under the "Atlas Program" funded jointly by the U. S. Geological Survey and the Massachusetts Water Resources Commission, progress was made on several basin studies during FY 77. The review of three atlas reports for Northeast Coastal basins(Mystic, Shawsheen, lower Merrimack) was completed and are awaiting the Director's approval. Fieldwork is continuing on schedule for the Su As Co basins and on Martha's Vineyard. The Atlas Report for Nantucket was completed and is now under review. On Nantucket, a deep water-resource and stratigraphic test near the center of the island has encountered freshwater at greater depth than predicted. The implication of this discovery is that under similar circumstances, freshwater may remain trapped under extensive areas of the Continental Shelf.

Overall Water Plan Studies

Massachusetts Water Supply Policy Study

The Division, as a member of the study team headed by the Office of Environmental Affairs, was involved in the completion of the Massachusetts Water Supply Policy Study. The consultant firm of Wallace, Floyd, Ellensweig and Moore, Inc., Architects/Planners, conducted a literature search for water supply problems, issues, current policy, current objectives, current conditions and criteria guiding present operations and planning. The document examines the need for sound state policies and recommends several policy packages for consideration. Among its many recommendations is the strengthening of this Division so it would be better able to prepare and maintain an assessment of water resources by watershed areas; to coordinate and guide watershed planning· to administer technical assistance and grant programs; to prepare "water budgets" and plans for all water used, including recreational water; to advise the Secretary of Environmental Affairs on water rights and water allocation questions; to develop a formal process to deal with interbasin transfers and recommend agreements acceptable to all parties in specific interbasin transfer cases; to monitor stream, pond, lake and aquifer withdrawals and the treatment thereof; to review local water rates and to regulate and administer such other matters as may affect the public health, safety and welfare. This would also include the provision of technical assistance to local communities, for advising on local supply options, for securing federal and other grant programs, and for conducting conservation programs. It would also initiate state level responsibilities for broad, long-range water supply planning, coordinating with regional planning agencies and using defined watershed areas for basic analysis.

Massachusetts Water Resources Study

The Type IV Massachusetts Water Resources Study, a cooperative effort between the U. S. Department of Agriculture and the Massachusetts Water Resources Commission, is being conducted to provide information and technical data for a comprehensive plan for the development and use of the Commonwealth's water and related land resources. Investigations and analyses cover such items as identification of potential and existing upstream reservoir sites, determination of present land use with projections for future land use, identification of selected flood-prone areas, with alternatives for providing flood protection, identifications of existing wetlands in selected areas based on soils, and delineation of selected flood plains.

Four regional reports, Berkshire, Connecticut, Central and Coastal, will be prepared as part of the study. The Berkshire region report was published during FY 77. A draft for the Coastal was released and one for the Central region is imminent. Specific items considered in each study area are land use, flood damages and protection, erosion and sediment, recreation, fish and wildlife, wetlands, water supply, and water quality. These documents are intended for professionals in local, state, and federal agencies in planning for the conservation and development of water resources.

Public Lakes, Ponds, and Reservoirs

The Division's staff is completing an inventory of water bodies with emphasis being placed on determining their public or private status. The Berkshire region was completed and included as part of the final report in the Type IV study. An inventory was completed during FY 77 for the North Shore, Ipswich, Neponset, Parker, Taunton, Buzzards Bay, Narragansett Bay, Cape Cod and Islands study areas of the Coastal region. The South Shore and Nashua study areas were in the process of being inventoried. A review of all these study areas by pertinent agencies will be completed in FY 78.

Coordination

Coordination during the fiscal year included formal contacts with all 13 Regional Planning Commissions and 253 of the Commonwealth's 351 cities and towns. These contacts were primarily to give notice and solicit local participation in the Statewide Massachusetts Water Resources Study conducted in cooperation with the U. S. Department of Agriculture. A serious effort is being made to achieve consistency between water planning studies and other state planning efforts. such as the work of the Office of State Planning and the State Comprehensive Outdoor Recreation Plan.

Coordination and review of all Federal grant program applications is obtained by full participation in the A-95 review procedures. Applications which appear to relate to Water Resources interests are requested and scrutinized.

The Division is now less directly linked to the administration of the New England River Basin Commission (NERBC) but staff participation in coordinating groups and study management teams continues. Reorganization has made it possible for the Secretary of the Executive Office of Environmental Affairs to assume the position of vice-chairperson of the NERBC replacing the Chairman of the Water Resources Commission.

Coordination with the Water Resources Research Center at the University of Massachusetts is afforded by a continuing program of research project review.

Graphic Arts Projects

1) Routine graphic work of the Division.

2) 2nd edition revision of Chapter 111 Groundwater Study Report titled, "Groundwater & Groundwater Law in Massachusetts.

3) Manuscript of Wetlands Plant Manual.

Outside activities included exhibit and graphic work for the Department of Environmental Management, Division of Law Enforcement and Mass. State Employees' Blood Bank, being the only Graphic Artist within the Executive Office of Environmental Affairs. As of July, 1977, the Graphic Artist will be transferred to DEM as Public Information Officer, but will hopefully continue to meet the needs of the Division of Water Resources.

208 Planning Assistance

Areawide Wastewater Management Planning is mandated by P. L. 92-500, Federal Water Pollution Control Act, 1972 Amendments, has moved into the final management plan stage this past year. Nine of the Commonwealth's Regional Planning Agencies have made varying degrees of progress towards developing final local and regional solutions for managing point and non-point pollution sources entering receiving waters.

During the past fiscal year, the Division has dealt principally with five of the Regional Planning Agencies. Considerable staff effort has been spent on reviewing program output reports, serving on technical planning committees and in-putting to a state-directed program to effectuate 208 planning in non-designated geographic planning areas. Staff input has had particular focus on reviewing ground water investigation, water usage and non-point source analysis work reports. The current stage of section 208 planning has steered Division review efforts into the legal/institutional issues of management plan implementation. Socio-economic, fiscal and governmental authority impacts of proposed pollution abatement management plans are becoming the current considerations for analysis and comment.

Highway Planning and Environmental Assessment

The Division continued its involvement with the Department of Public Works Interagency Environmental Impact Committee this past year A staff member is assigned to this committee which serves as an interagency clearing house for the review of all highway and bridge construction projects requiring environmental impact reports. The staff takes the responsibility of analyzing potential project impacts on stream hydrology, flood plains, wetland areas and ground water. Technical assistance and review is directed at other considerations such as runoff control, water supply protection, and stream channel capacity effects. Three of the projects reviewed in the past year include the Southwest Corrider, Route 2 Expansion and the Final Environmental Impact Statement on the DPW Snow and Ice Control Program.

Small Watershed Flood Prevention Planning (PL 566)

Watershed work plan revisions continued during FY 77 on the Washington Mountain Brook and Upper Quaboag River PL 566. The environmental assessment on the Moose Hill multi-purpose reservoir project was completed. The West Branch of the Westfield and Avon-Braintree-Holbrook-Randolph flood control projects had continuing environmental assessments conducted this year. The Soil Conservation Service was in the process of having a full environmental impact statement prepared on the West Branch of the Westfield project. The draft environmental impact statement on Washington Mountain Brook was completed in December, 1976. Finally, preparations for an environmental assessment on Baiting Brook in the Su As Co Watershed were in progress at the end of FY 77.

At the Moose Hill Site, the salvaging of historically significant materials was under way at the close of the fiscal year.

Watershed Construction Progress Report

Su As Co Watershed

The Millham Dam Phase repairs of the Tyler site were completed in August, 1976. Land rights operations and negotiations are continuing. The bid for the annual maintenance contract was awarded to the low bidder. The Ross site vegetation and stabilization work are ongoing.

Quaboag River

Land taking documents were being prepared at the end of FY 77 on the Moose Hill Reservoir Site The low bidder was awarded the annual maintenance contract.

Clam River

Construction proceeded on schedule for the Clam Lake Site. The annual maintenance contract was awarded and meetings with the Assistant Attorney Generals from Eminent Domain are taking place.

West Branch - Westfield River

Land rights operations and meetings on the eleven sites of the watershed are in progress.

Washington Mountain Site

The clearing of site was completed during FY 77. The other two construction sites are now in progress.

Massachusetts Water Watch Program Progress Report

All of the towns, excepting Rowley, participating in the program have failed to report any measurements to the Division during FY 77. Rowley's sites are operating and reporting measurements promptly.

National Flood Insurance Program

As the state coordinating agency for this program, we have been involved in fostering participation, setting priorities for rate studies and working with consultants performing the rate studies.

There are 312 communities presently participating in the program. Twenty-five (25) communities are in the regular program and the remaining 287 communities are in the emergency program. There are five communities which have been suspended for failure to adopt the required land use control measures, They are Tewksbury, Brookline Mansfield, Gardner and Truro.

This Division, in cooperation with the regional office of the federal insurance administration, is working with the Massachusetts Building Code Commission in an attempt to revise the state building code to conform to the minimum building requirements of the federal regulations.

Forty-two flood insurance rate studies were assigned to contractors during FY 1977. We have long sought to have such contracts let on a river basin basis and are gratified by the fact that this method is now most often used. Another staff recommendation has been the use of accurate topographic mapping employing orthophotogrammetric methods. The contractor working in the Nashua Basin will utilize and enlarge upon such accurate topographic mapping provided by this Division, pursuant to our own wetland restriction program. In developed areas, we hope that two foot contour base maps will become a basic water resources planning tool. (See figure 4).

- Regular Program Communities -

Bedford
Bourne
Dennis
Duxbury
Fairhaven
Falmouth
Heath
Holbrook
Marion
Mattapoisett
Nahant
Needham
New Bedford
Newbury
Norfolk
Provincetown
Quincy
Salem
Somerset
Swampscott
Swansea
Westport
Winthrop
Westwood

Cooperative Flood Hazard Studies

Clam River

The draft report of the Clam River Watershed in the Town of Sandisfield was completed and is in review. Flood frequency elevation analysis, flood profiles, and flood plain delineation maps were constructed for Clam River, Buck River and Silver Brook. Final report is expected in mid-FY 78.

Upper Quaboag River

Completion of the final report for the watershed is expected by March, 1978. Major streams studies are: Mill River, East Brookfield River, Sevenmile River, Turkey Hill Brook, and Cranberry River. The watershed is located primarily in the Towns of New Braintree, Oakham, Rutland, West and North Brookfield, Brookfield and East Brookfield, Spencer, and Paxton.

Floodplain Information Reports

Town of Easton

The U. S. Army Corps of Engineers completed a flood plain information report involving the major streams in the Town of Easton The report contains profiles based on the floods of February, 1886, March, 1936, September, 1938, August, 1955, and March, 1968.

North Nashua River

Flood plain information reports covering the North Nashua River in the city of Fitchburg and the Town of Leominster were completed by the Army Corps of Engineers. The report highlights a summary of historical floods and provides profiles based on the floods of March, 1936, September, 1938, October, 1956, June, 1944, and September, 1954.

Millers River and North Branch

A flood plain information report was completed for the Millers River and North Branch in the Town of Winchendon by the U. S Army Corps of Engineers, New England Division. A summary of historical floods and flood profiles was based on the floods of March, 1936, and September, 1938.

RAINFALL (in inches) 1976

	State	Northeast Section	Southeast Section	Central Section	Conn. River Section	Western Section
January	5.10	4.67	5.85	5.60	5.62	4.72
February	2.83	2.74	2.46	2.83	3.44	3.13
March	2.92	2.62	3.66	2.82	2.80	3.40
April	2.47	2.34	1.49	2.86	4.05	2.94
May	3.48	2.71	2.61	3.38	5.39	5.30
June	1.56	0.84	1.46	1.50	2.89	3.96
July	3.79	4.61	4.76	3.20	2.90	3.84
August	6.85	5.79	8.18	6.17	8.27	6.89
September	2.16	2.13	1.83	1.98	2.55	3.22
October	4.46	4.30	6.18	4.91	5.22	4.70
November	0.87	0.72	1.18	0.82	0.88	0.73
December	3.09	3.18	3.32	3.15	2.44	2.28
Year	39.58	36.65	42.98	39.22	46.45	45.11
Normal	44.05	42.58	44.32	44.33	44.65	45.15

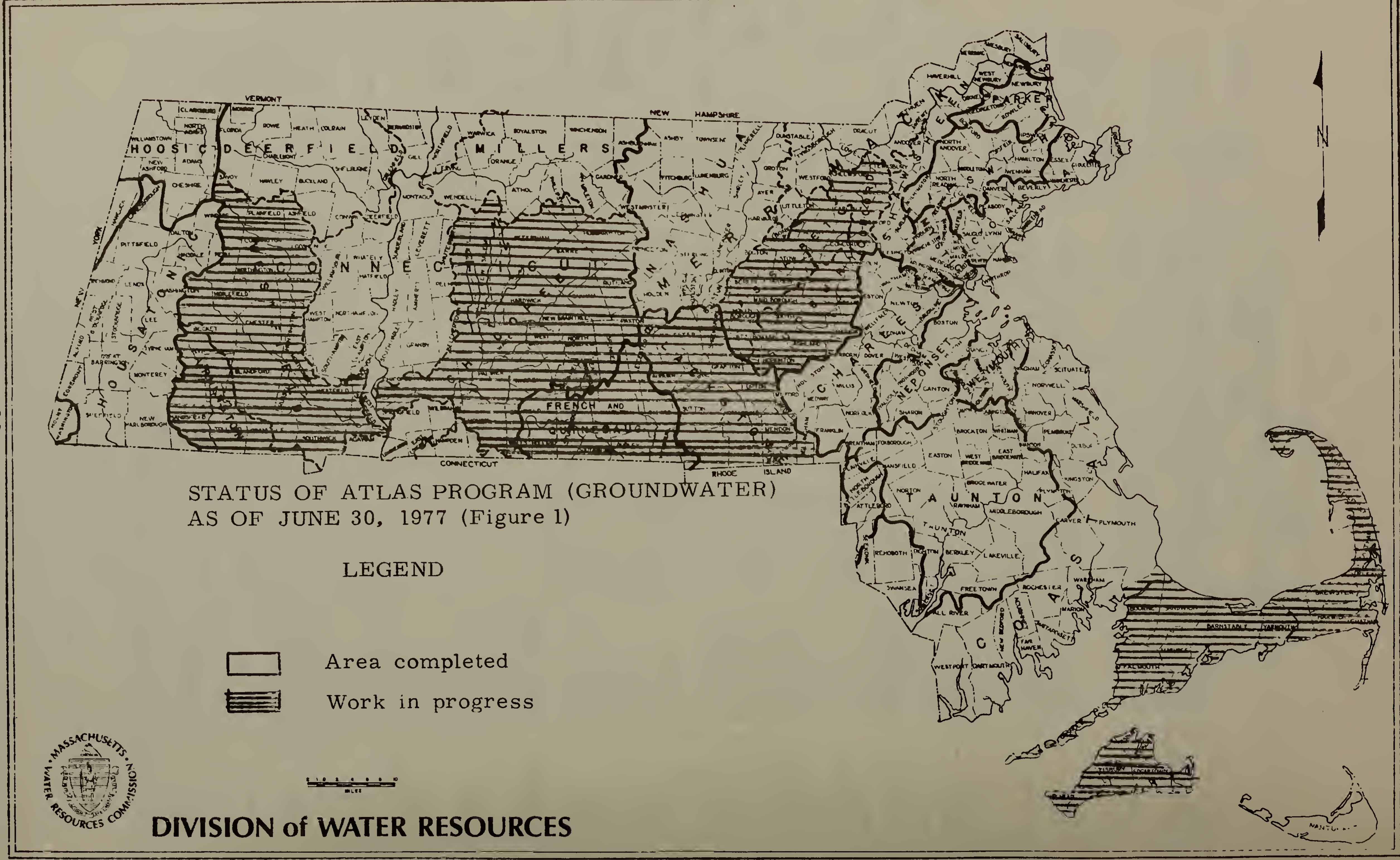
RAINFALL EXCESS OR DEFICIENCY (in inches) 1978

	State	Northeast Section	Southeast Section	Central Section	Conn. River Section	Western Section
January	+1.61	+1.09	+2.05	+1.92	+2.35	+1.57
February	-0.48	-0.67	-1.19	-0.68	+0.32	+0.23
March	-0.86	-1.17	-0.52	-1.20	-0.85	-0.03
April	-1.11	-1.26	-2.49	-0.83	+0.48	-0.75
May	-0.18	-0.62	-0.79	-0.11	+1.46	+1.37
June	-1.98	-2.50	-1.76	-2.19	-1.07	-0.26
July	+0.14	+1.16	+1.79	-0.28	-1.25	-0.63
August	+2.84	+2.17	+4.19	+2.55	+4.26	+2.60
September	-1.61	-1.46	-1.92	-1.84	-1.34	-0.97
October	+0.98	+1.05	+2.76	+1.65	+1.78	+1.34
November	-3.02	-3.19	-2.66	-3.28	-3.10	-3.15
December	-0.80	-0.53	-0.80	-0.82	-1.24	-1.36
Total Excess	+5.57	+5.47	+10.79	+6.12	+10.65	+7.11
Total Deficiency	-10.04	-11.40	-12.13	-11.23	- 8.85	-7.15
Total Excess pr Deficiency for Year	-4.47	-5.93	- 1.34	- 5.11	+ 1.80	-0.04

REGISTER OF PUBLIC LAW 566 WATERSHEDS
MASSACHUSETTS
January 1975

Name of Watershed	County	Sponsors	Size (Acres)	Date of Application	Date of State Approval (Application)	Date of Planning Authorization	Date of State Legislation	Date Work Plan Completed (Signed by Sponsors)	Date of Operation Approval
BAITING BROOK	Middlesex	Middlesex C.D.	2,182	11/26/56	12/10/56	1/8/57	7/13/72	4/25/57	8/30/57
BLACKBERRY RIVER	Berkshire, Ma.; Litchfield, Ct.	Berkshire C.D., Ma. Conn. Commissioner of Agriculture & Natural Resources	**7,600**	12/1[illegible]/56	—	—	8/20/59	10/15/58	8/31/59 1/30/61 6/1[illegible]/65
BRADLEY BROOK	Hampden	Hampden C.D. Town of Russell	6,970	12/5/60	2/13/61	4/23/62	6/28/63 8/3/67	4/3/63 3/5/68 7/23/68 7/15/69	12/19/63 3/14/68 2/ 7/29/68 2/ 7/18/69 2/ 12/[illegible]1/70 2/ 10/20/71 2/
BROAD BROOK	Hampden Hampshire	Hampden C.D. Hampshire C.D. Town, Easthampton	7,573	8/13/58	10/27/58	8/15/61	7/23/63	4/9/63	12/19/63
CLAM RIVER	Berkshire	Berkshire C.D. Mass. WRC	20,065	4/6/59	5/11/59	6/17/60	7/25/63 7/19/68	7/27/63 3/9/65 3/24/67 3/24/70	12/19/63 3/12/65 2/ 9/15/67 2/ 4/9/70 2/ 5/18/73 2/
COLD RIVER	Berkshire Franklin	Berkshire C.D. Franklin C.D.	19,904	3/3/64	4/13/64	—	—	—	— 4/
DANFORTH BROOK	Worcester	NW Worcester C.D.	3,480	6/6/63	7/8/63	—	—	—	— 4/
DIAMOND BROOK	Norfolk	Norfolk C.D. Town of Walpole	1,270	1/27/64	6/24/64	2/12/68	9/2/66	**2/24/76**	**9/29/76**
FURANCE BROOK 5/	Hampden, Ma.; Tolland, Conn.	Hampden C.D., Ma. Conn. Com. of Agri. & Natural Resources	33,326	4/56	—	—	—	7/2/58	8/20/58 6/30/65 2/
GREEN RIVER	Berkshire	Berkshire C.D.	27,315	10/1/65	10/11/65	—	—	—	-- 3/
HUDSON BROOK	Berkshire, Ma.; Bennington, Vt.	Berkshire C.D. Bennington C.D.	4,886	12/18/63 1/20/64	2/10/64	—	—	—	-- 4/
IPSWICH RIVER	Essex Middlesex	Essex C.D. Middlesex C.D.	86,000	6/10/63	6/12/63	—	—	—	— 3/
KONKAPOT RIVER	Berkshire, Ma.; Litchfield, Conn.	Berkshire C.D. Conn. Com. of Agri. & Natural Resources	41,700	3/16/60 3/28/60	3/14/60 3/30/60	—	—	--	—
LITTLE RIVER	Essex	Essex C.D. City of Newburyport	6,030	10/26/62	11/15/62	6/24/63	—	12/[illegible]/67	Term.
MILL RIVER	Franklin Hampshire	Hampshire C.D. City of Northampton Town of Williamsburg	37,760	5/11/70	7/13/70	—	—	—	-- 3/
MONATIQUOT RIVER	Norfolk	Norfolk C.D.	17,760	4/8/57 8/27/63 1/	6/13/57	2/27/58	—	6/27/59	Term.
MUNN BROOK	Hampden	Hampden C.D.	14,100	5/8/61	6/12/61	—	—	—	—
PINE TREE BROOK 5/	Norfolk Suffolk	Norfolk C.D. Town of Milton	[illegible],184	11/6/63	1/2/64	9/19/66	9/21/65	5/16/68 1/26/70	6/[illegible] 2/2/70 2/ 4/30/71 2/
POWDERMILL BROOK 5/	Hampden Hampshire	Hampden C.D. City of Westfield	12,825	3/7/60	4/12/60	4/14/61	4/9/62	10/26/61	11/15/61
SMELT BROOK	Norfolk	Norfolk C.D.	1,540	4/8/57 8/27/63 1/	6/13/57	2/27/58	—	2/12/59	Term.
SOUHEGAN RIVER	Middlesex, Ma.; Hillsborough, New Hampshire	Middlesex C.D., Ma. Hillsborough SCD, NH N.H. Water Res. Bd. N.H. Fish & Game Town of Greenville, NH Town of Milford, NH	109,440	5/21/58	—	—	—	5/3/61	9/8/61 1/66 2/ 9/69 2/
SUASCO	Middlesex Worcester	Middlesex D.C. NE Worcester C.D. Mass. WRC Mass. DF&W Mass. DNR	241,617	8/8/55 11/26/56 1/	9/13/55 12/10/56	11/17/55 10/1/65	9/26/60 6/12/64 12/28/65 8/21/70	3/25/59 11/2[illegible]/64 5/25/67 2/12/68	8/31/59 9/10/65 2/ 5/26/67 2/ 2/14/68 2/ 5/5/72 2/
TEN MILE RIVER	Bristol Norfolk, Ma.; Providence, RI	Bristol C.D. Norfolk C.D. SERPEDD, Ma.; N. Rhode Island C.D.	4[illegible],300	11/23/71	2/14/72	9/26/73	—	—	—
TOWN RIVER	Norfolk Bristol Plymouth	Norfolk C.D. Plymouth C.D. Bristol C.D.	34,560	6/21/55	—	9/9/55	—	7/14/68	Term.
TRAPHOLE BROOK	Norfolk	Norfolk C.D. Town of Walpole	[illegible],207	3/30/64	7/24/64	2/12/68	8/19/70	—	—
UPPER QUABOAG RIVER	Hampden Hampshire Worcester	So. Worcester C.D. NW Worcester C.D. Town E. Brookfield Town of Leicester Mass. WRC	9[illegible],301	2/28/58	3/10/68	9/11/59	6/19/62 7/10/68 7/15/70	5/31/61 6/28/63 11/12/68	8/23/61 6/20/63 2/ 12/[illegible]/68 2/ **5/8/75 2/** **9/20/75 2/**
WASHINGTON MOUNTAIN BROOK	Berkshire	Berkshire C.D. Town of Lee Mass. DNR	5,[illegible]40	1/12/61	2/13/61	6/24/63	7/17/68	10/2/66 12/2[illegible]/69	4/1/69 12/31/69 2/ 7/16/71 2/ 5/18/73 2/
WEST BRANCH WESTFIELD RIVER	Berkshire Hampden Hampshire	Berkshire C.D. Hampden C.D., Mass. DNR, Hampshire C.D.	60,800	5/13/60	6/13/60	6/14/65	7/16/68 8/11/69	9/10/69	10/9/70 11/15/71 2/
WEWEANTIC RIVER	Plymouth	Plymouth C.D.	39,843	7/17/59 8/13/68 1/	9/14/59 10/24/68	—	—	—	— 3/

1/ Amendment to Application. 2/ Supplement Approval Date. 3/ Inactive. 4/ Application Withdrawn. 5/ Project Completed.



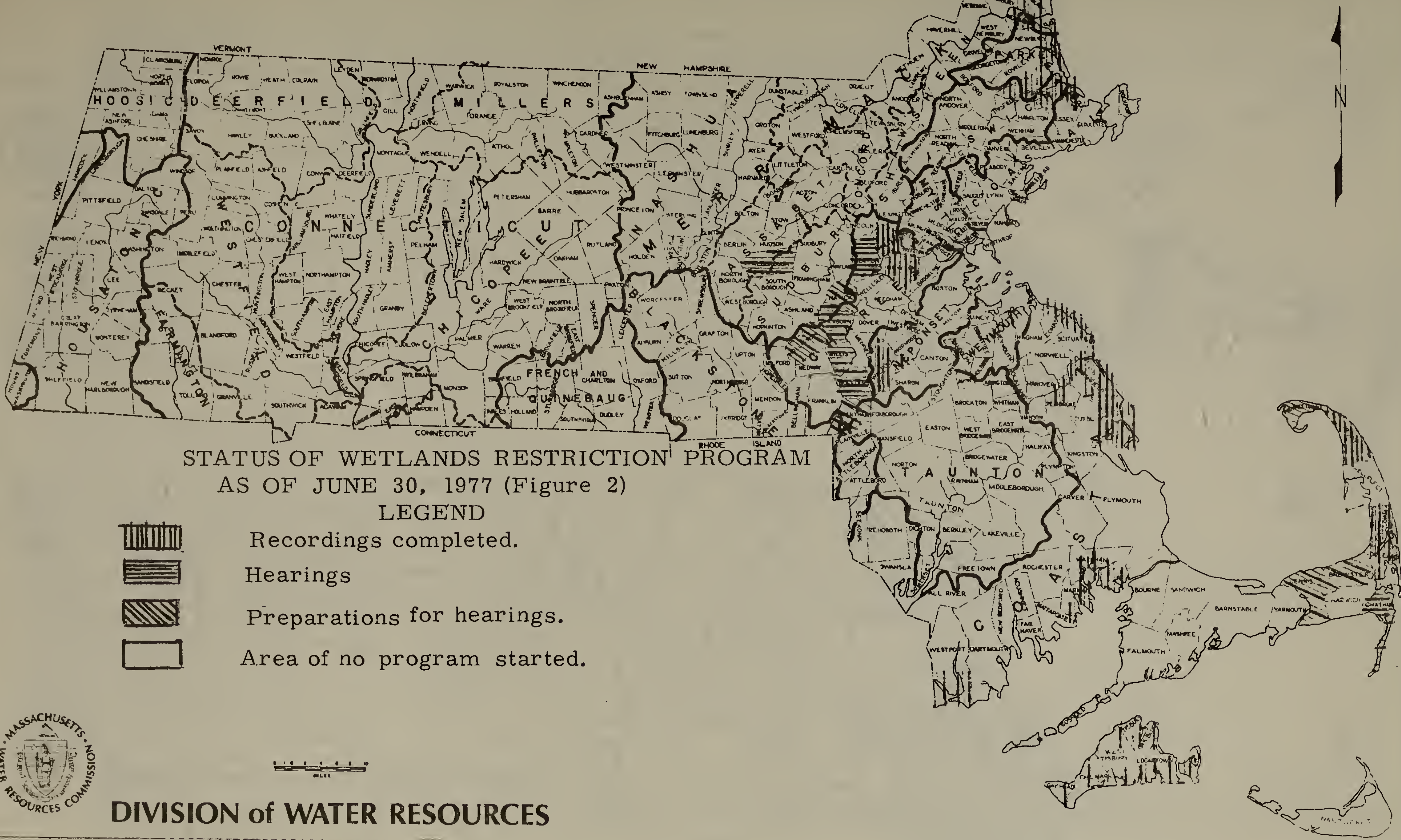
STATUS OF ATLAS PROGRAM (GROUNDWATER)
AS OF JUNE 30, 1977 (Figure 1)

LEGEND

☐ Area completed

▤ Work in progress

DIVISION of WATER RESOURCES



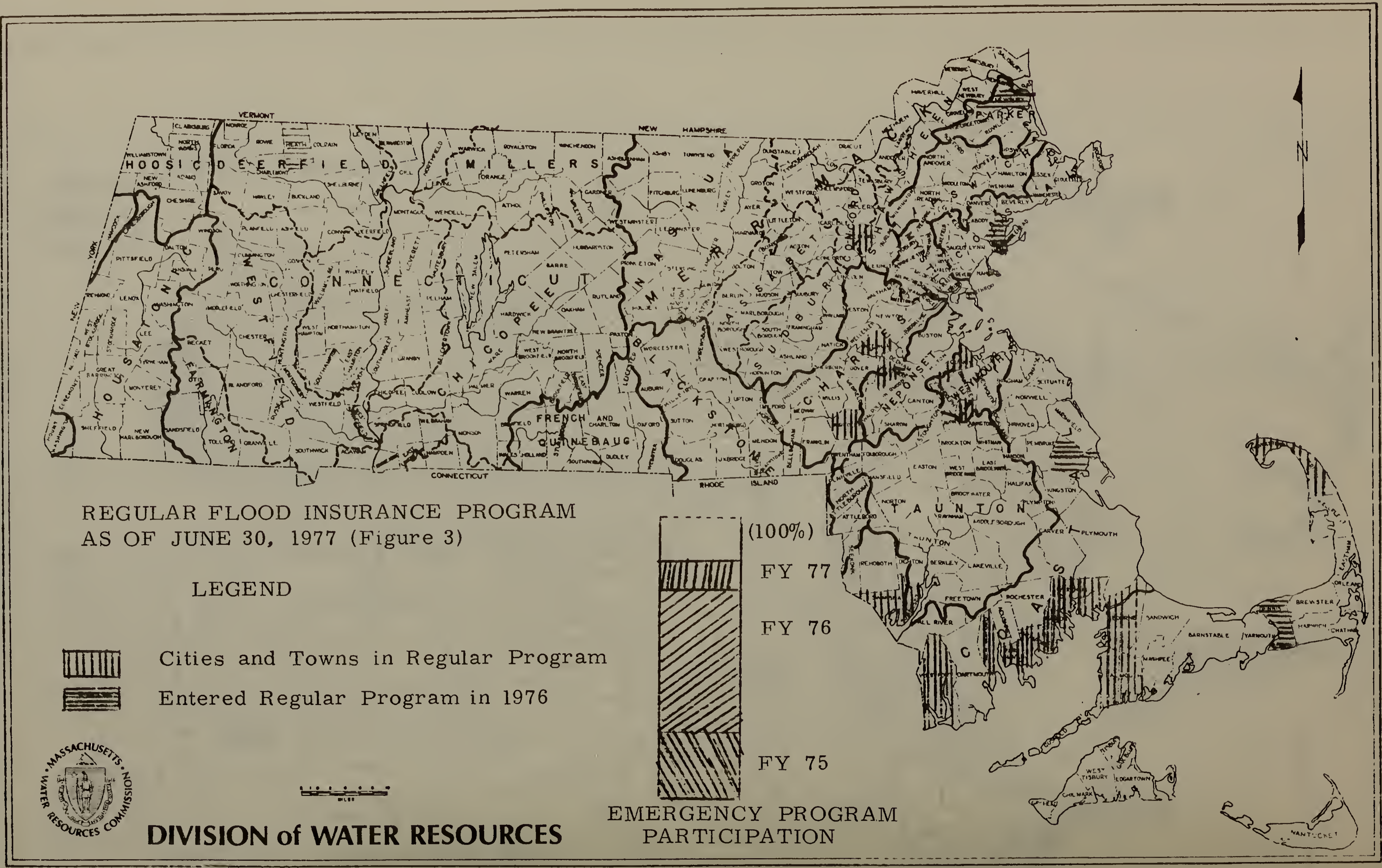
STATUS OF WETLANDS RESTRICTION PROGRAM
AS OF JUNE 30, 1977 (Figure 2)

LEGEND

▥	Recordings completed.
▤	Hearings
▨	Preparations for hearings.
☐	Area of no program started.

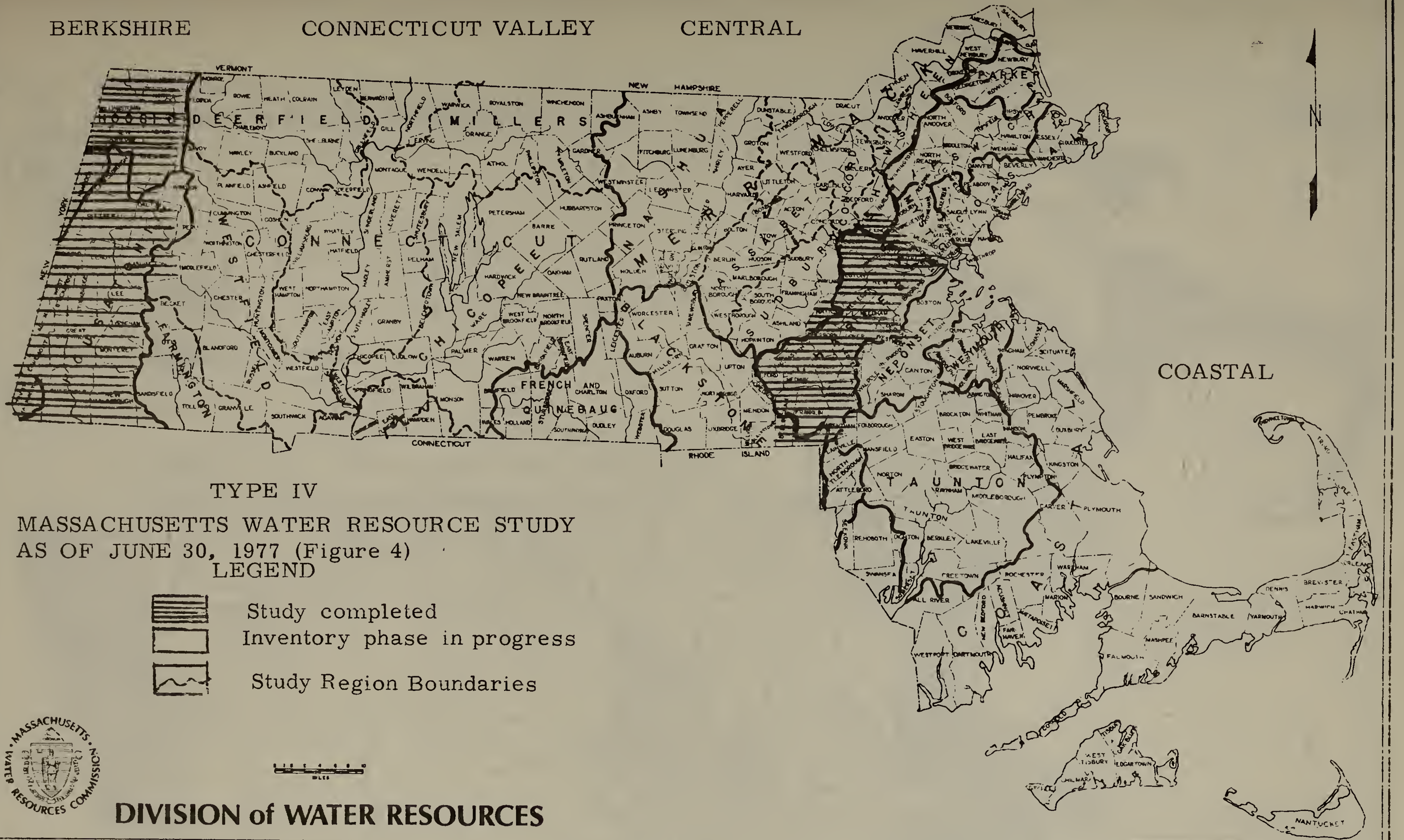
MASSACHUSETTS WATER RESOURCES COMMISSION

DIVISION of WATER RESOURCES



REGULAR FLOOD INSURANCE PROGRAM
AS OF JUNE 30, 1977 (Figure 3)

LEGEND



TYPE IV

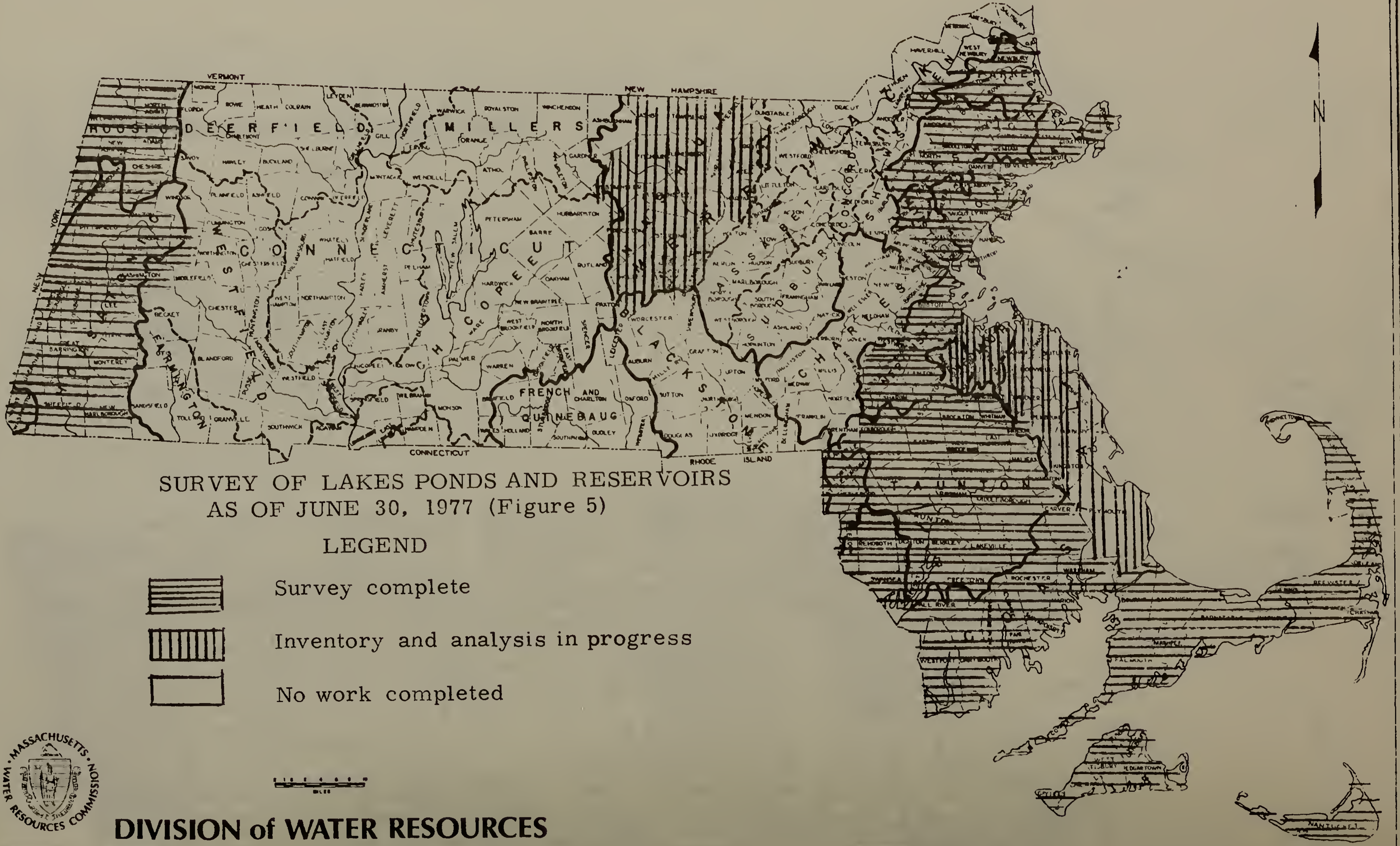
MASSACHUSETTS WATER RESOURCE STUDY
AS OF JUNE 30, 1977 (Figure 4)

LEGEND

▤ Study completed
☐ Inventory phase in progress
〰 Study Region Boundaries

MASSACHUSETTS WATER RESOURCES COMMISSION

DIVISION of WATER RESOURCES



SURVEY OF LAKES PONDS AND RESERVOIRS
AS OF JUNE 30, 1977 (Figure 5)

LEGEND

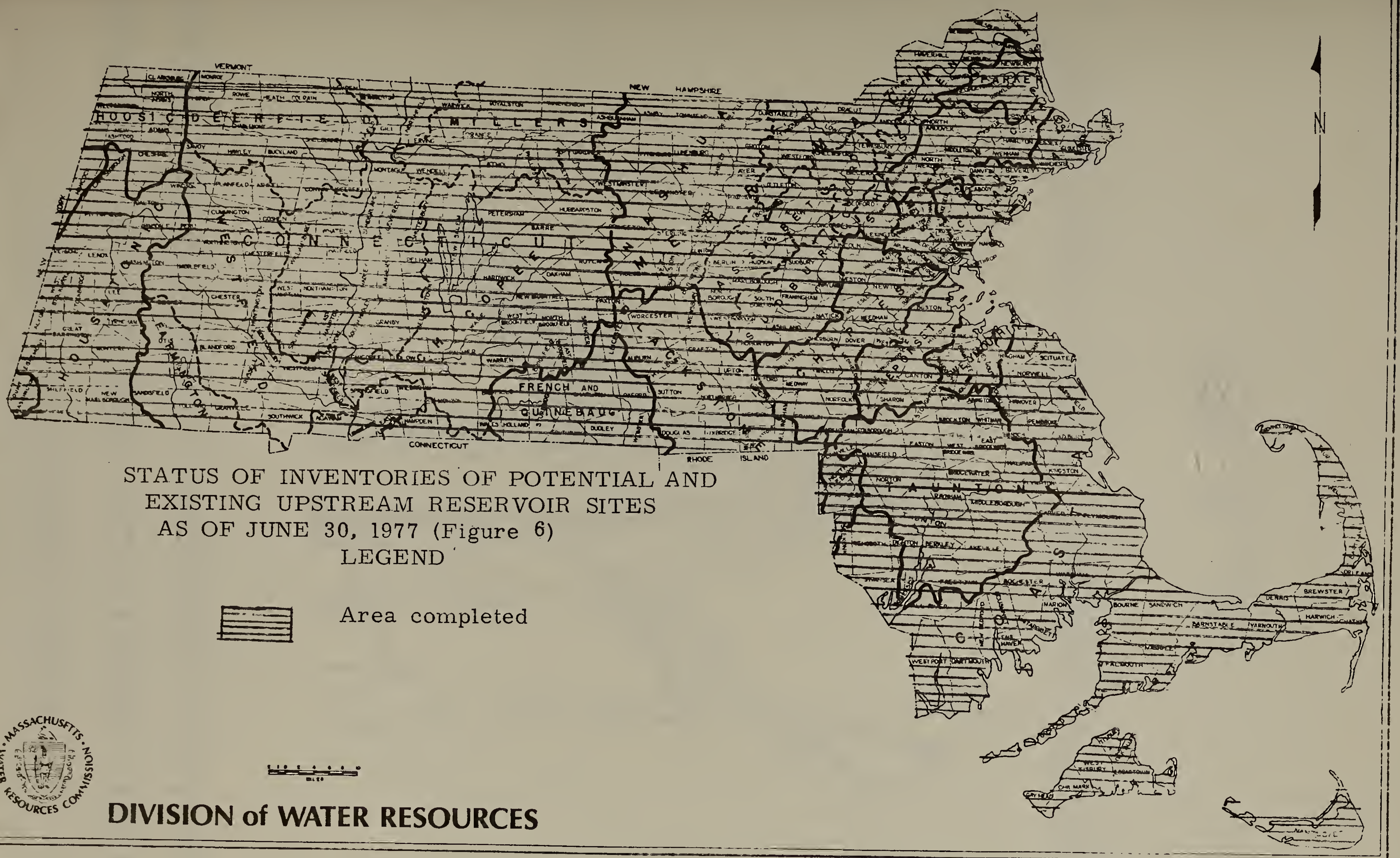
▤ Survey complete

▥ Inventory and analysis in progress

☐ No work completed

MASSACHUSETTS · WATER RESOURCES COMMISSION

DIVISION of WATER RESOURCES



STATUS OF INVENTORIES OF POTENTIAL AND EXISTING UPSTREAM RESERVOIR SITES AS OF JUNE 30, 1977 (Figure 6)

LEGEND

▤ Area completed

DIVISION of WATER RESOURCES

1977

ANNUAL REPORT

massachusetts department of environmental quality engineering

DIVISION OF WATER POLLUTION CONTROL

thomas c. mcmahon, director

ANNUAL REPORT

DIVISION OF WATER POLLUTION CONTROL

FISCAL YEAR ENDING JUNE 30, 1977

Cover

Recently emerged Adult
Dragonfly with Exuviae

Publication # 10,021-97-100-10-77-CR
Approved by Alfred C. Holland, State Purchasing Agent

DIVISION OF WATER POLLUTION CONTROL
ANNUAL REPORT
FISCAL YEAR 1977

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STAFF

The following table reflects the status of the Administrative and Technical staff of this Division.

ADMINISTRATIVE	GROUP	FY 76	FILLED 6/30/77
Director	30	1	1
Counsel III	24	1	1
Counsel II	22	1	1
Assistant to the Director	20	1	1
Head Administrative Assistant	17	1	1
Senior Accountant	16	1	1
Administrative Assistant	14	3	2
Semi-Senior Accountant	14	1	1
Head Clerk	11	1	1
Principal Clerk	09	2	2
Senior Clerk & Stenographer	07	13	10
Senior Clerk & Typist	06	3	2
Statistical Machine Operator	05	1	1
Junior Clerk Typist	03	1	
		31	25
TECHNICAL			
Supervising Sanitary Engineer	26	7	7
Environmental Bio-Engineer	25	1	1
Associate Civil Engineer	24	2	2
Associate Sanitary Engineer	24	9	8
Associate Planner	22	1	1
Principal Sanitary Engineer	21	5	5
Senior Sanitary Engineer	19	8	6
Senior Planner	19	2	2
Senior Chemist	18	2	2
Assistant Sanitary Engineer	17	8	5
Junior Sanitary Engineer	15	8	7
Biochemist	16	2	2
Aquatic Biologist	18	1	1
Junior Civil Engineer Draftsman	15	2	2
Junior Biochemist	14	2	2
Senior Sanitary Engineering Aid	12	1	1
Laboratory Technician	09	1	
Laboratory Assistant	05	1	
		63	54
Seasonal	TOTALS	94	79
Senior Sanitary Engineering Aid	12	12	12

ADMINISTRATIVE BUDGET

Budgetary appropriations and expenditures for the Division of Water Pollution Control are shown in the following table:

		APPROPRIATIONS		FY 1977 EXPEND (Payments & Acct Payable)
ACCOUNT	TITLE	FY 1976	FY 1977	
01	Salaries, Perm. Pos.	650,200.	817,124.	693,759.
02	Salaries, Other	583,000.	583,000.	581,562.
03	Services, Non-Employees	11,000.	374,014.	374,014.
05	Clothing	250.	250.	244.
07	Lab Supplies & Exp.	7,500.	7,500.	7,478.
08	Heat & Other Plant Oper.	4,300.	6,300.	6,300.
10	Travel & Auto Expense	50,000.	35,000.	34,312.
11	Advertising	19,000.	19,000.	18,943.
12	Maintenance	14,000.	14,000.	13,933.
13	Special Supplies	5,000,	55,000.	53,991.
14	Office & Admin. Expenses	30,000.	46,360.	46,338.
15	Equipment	47,525.		
16	Rentals	84,000.	70,640.	66,397.
	TOTALS	$1,505,775.	2,028,188.	1,897,271.

STATEMENT OF FUNDS RECEIVED

June 30, 1977

DIVISION INCOME ACCOUNT #35

CASH RECEIPTS	HAZARDOUS WASTE	MISC. INCOME	REIMBURSEMENT FOR SERVICES FEDERAL GOV'T.	FINES AND PENALTIES	FEDERAL GRANTS
7/31/76	100.	17.40			
8/31/76	150.	29.40			
9/30/76	50.		270,085.		
10/31/76	-0-				
11/30/76	350.				
12/31/76	3,550.		205,900.		
1/31/77	1,650.		205,900.		30,000.
2/28/77	300.	16.00			
3/31/77	300.	4.00			
3/31/77	100.	54.80			
4/30/77	200.		229,900.		30,000.
4/30/77					69,350.
5/31/77	550.	2.00			
6/30/77	200.	42.70		10,000.	
	7,300.	166.30	911,785.	10,000.	129,350.

SOURCES		FEDERAL GRANT
Hazardous Waste	$ 7,300.00	
Miscellaneous Income	166.30	
Reimbursement for Services Federal Government	911,785.00	
Fines and Penalties	10,000.00	
Federal Grants		129,350.00
TOTALS	$929,251.30	129,350.00

STATEMENT OF FUNDS RECEIVED
AND TRANSFERRED TO STATE TREASURER

June 30, 1977

General Fund Receipts:	6/30/77
Handling or Disposal of Hazardous Wastes 1011-61-03-40	7,300.00
Miscellaneous Income 1011-69-01-40	166.30
Reimbursement for Services Federal Government	911,785.00
Fines and Penalties 1011-41-01-40	10,000.00
	$ 929,251.30
Federal Grant Account:	
Accelerated Construction Grant 4511-58-53-36	60,000.00
Management of Construction Grants Program 4511-58-55-36	69,350.00
	129,350.00
Reimbursement for Services:	
Re: Oil Spillage 8302-62-08-36	26,000.00
Total Receipts Transferred to State Treasurer:	
7/1/76 to 6/30/77	$1,084,601.30

BOND FUNDS
June 30, 1977

APPROPRIATIONS		
Regular		
1967 Fiscal Year	150,000,000.00	
1971 Fiscal Year	250,000,000.00	400,000,000.00
Addition Transfer and Credits		
Reimbursement Pre-Financing		
Federal Share		
1974 Fiscal Year	2,939,800.00	
1975 Fiscal Year	379,580.00	3,319,380.00
Oil Spill Recoveries		
1970 Fiscal Year	1,095.75	
1971 Fiscal Year	9,787.75	
1972 Fiscal Year	17,397.56	
1973 Fiscal Year	32,463.89	
1974 Fiscal Year	18,101.45	
1975 Fiscal Year	51,093.84	
1976 Fiscal Year	1,277.30	
1977 Fiscal Year	26,000.00	157,217.54
Total Appropriations		403,476,597.54
Unallotted Appropriations	G.L. Acct. #16	200,613,725.74
Allotted Appropriations		202,862,871.80
Reserve for Encumbrances, Balances June 30, 1977 Acct. #18		78,005,591.02
		$ 124,857,280.78
Expended Funds		
1969 Fiscal Year	3,909,955.72	
1970 Fiscal Year	5,794,991.80	
1971 Fiscal Year	7,481,857.81	
1972 Fiscal Year	11,571,527.02	
1973 Fiscal Year	11,723,067.71	
1974 Fiscal Year	15,806,471.56	
1975 Fiscal Year	14,660,951.97	
1976 Fiscal Year	30,323,886.64	
1977 Fiscal Year	20,055,191.06	
Total Expended Funds		121,327,901.29
Unencumbered Allotment, June 30, 1977		3,529,379.49 G.L. #17

BOND FUND ANALYSIS

FISCAL YEAR RECAPITULATION

Year	Appropriation	Unallotted	Allotted	Reservation and Purchase Order	Expenditure	Uncumbered Allotment
		Acts of 1977 Chapter 687				
1967	150,000,000.00	150,000,000.00				
1968	150,000,000.00	135,122,000.00	14,878,000.00	6,152,038.00		8,725,962.00
1969	150,000,000.00	126,298,639.00	23,701,361.00	18,650,884.28	3,909,955.72	1,140,521.00
1970	150,001,095.00	115,443,105.75	34,557,990.00	19,085,055.97	9,704,947.52	5,767,986.51
1971	150,010,883.50	96,019,927.50	53,990,956.00	26,662,561.00	17,186,805.33	10,141,589.07
1972	150,028,281.06	91,329,318.06	58,698,963.00	28,202,688.44	28,758,332.35	1,737,942.21
1973	150,060,744.95	78,740,303.75	71,320,441.20	28,523,426.78	40,481,400.06	2,315,614.16
1974	154,018,646.40	56,629,381.70	96,389,264.70	40,009,411.24	56,287,871.62	91,951.84
1975	153,449,320.24	41,489,621.36	111,959,698.88	40,151,768.63	69,574,685.80	2,233,244.45
1976	153,450,597.54	29,652,275.76	123,798,321.78	37,640,584.23	85,895,220.78	262,516.77
1977	153,476,597.54	29,499,383.13	123,977,214.41	30,298,107.06	93,563,365.86	115,741.49

Chapter 687 of 1966 Expires 6/30/79

Acts of 1970 Chapter 747

1971	250,000,000.00	250,000,000.00				
1972	250,000,000.00	250,000,000.00				
1973	250,000,000.00	250,000,000.00				
1974	250,000,000.00	239,236,590.76	10,763,409.24			10,763,409.24
1975	250,000,000.00	225,382,887.61	24,617,112.39	23,048,049.60	1,374,137.79	194,925.00
1976	250,000,000.00	218,098,313.61	31,901,686.39	16,524,196.94	15,377,489.45	
1977	250,000,000.00	171,114,342.61	78,885,657.39	47,707,483.96	27,764,535.43	3,413,638.00

Chapter 747 Acts of 1970 Expires 6/30/ 85

BOND FUND EXPENDITURES
FISCAL YEARS COMPARISON

	Acts of 1966 Chapter 687	June 30 1969	June 30 1970	June 30 1971	June 30 1972	June 30 1973
2685-9013	Research and Demonstration	67,461.47	328,115.48	332,038.46	450,564.62	543,570.85
2685-9015	Construction Grants	3,823,218.00	5,370,941.34	6,895,753.78	10,858,822.41	8,750,793.58
2685-9016	Pre-Financing Federal Share					2,090,235.00
2685-9018	Comprehensive Planning			35,947.64	39,990.69	
2685-9019	Curb of Oil Pollution	19,276.25	90,841.77	74,133.09	93,436.37	117,046.32
2685-9020	Pesticide Monitoring		3,438.02	49,727.11	23,960.24	17,369.46
2685-9021	University of Massachusetts		1,655.19	84,690.16	99,981.70	97,720.49
2685-9022	Berkshire Community College			7,750.00		
2685-9023	Bridgewater State College			1,817.57	4,770.99	1,409.24
2685-9024	Industrial, Municipal & River Survey					97,444.78
2685-9025	Basin Planning					7,477.99
	Total Ch. 687					
2685-9050	Acts of 1970 Chapter 747 Construction Grants					
Expenditures by FY		3,909.955.72	5,794,991.80	7,481,857.81	11,571,527.02	11,723,067.71

	Acts of 1966 Chapter 687	June 30 1974	June 30 1975	June 30 1976	June 30 1977	Total to Date
2685-9013	Research and Demonstration	438,089.16	680,643.63	553,573.74	216,441.76	3,610,499.17
2685-9015	Construction Grants	13,754,203.91	12,510,578.97	15,548,169.62	7,217,032.73	84,729,514.34
2685-9016	Pre-Financing Federal Share	1,229,145.00				3,319,380.00
2685-9018	Comprehensive Planning	22,117.50				98,055.83
2685-9019	Curb of Oil Pollution	85,645.70	25,818.59	19,157.21	89,756.44	615,111.74
2685-9020	Pesticide Monitoring	9,823.20				104,318.03
2685-9021	University of Massachusetts	69,669.33	35,696.38	184,056.27	124,992.48	698,462.00
2685-9022	Berkshire Community College					7,750.00
2685-9023	Bridgewater State College					7,997.80
2685-9024	Industrial, Municipal & River Survey	161,016.24	940.69			259,401.71
2685-9025	Basin Planning	36,761.52	33,135.92	15,578.14	19,921.67	112,875.24
			13,286,814.18	16,320,534.98	7,668,145.08	93,563,365.86
	Total Ch. 687					
2685-9050	Acts of 1970 Chapter 747 Construction Grants	15,806,471.56	1,374,137.79	14,003,351.66	12,387,045.98	27,764,535.43
Expenditures by FY 77			14,060,951.97	30,323,886.64	20,055,191.06	121,327,901.29

LEGISLATION

The following legislation was passed during the legislative year 1976 and through June 30 of the legislative year 1977.

Acts of 1976

Chapter 2	An Act authorizing the City of New Bedford to renew certain federal aid anticipation notes.
Chapter 12	An Act increasing the compensation of the members, chairman, vice chairman and secretary of the board of the Upper Blackstone Water Pollution Abatement District.
Chapter 33	An Act providing for emergency snow and ice removal in cities and towns.
Chapter 53	An Act further regulating certain procedures under the law relative to the protection of wetlands.
Chapter 56	An Act authorizing the taking of land in the Town of Clinton for the purposes of the Lancaster Sewer District.
Chapter 75	An Act further increasing the amount of money and the time within which the Oxford-Rochdale Sewer District may borrow certain sums.
Chapter 96	An Act providing for an assessment on certain parcels of land located in the Town of Medway abutting a way containing a public sanitary sewer.
Chapter 135	An Act making appropriations for the fiscal year nineteen hundred and seventy six to provide for supplementing certain existing appropriations and for certain new activities and projects.
Chapter 152	An Act making appropriations for the fiscal year ending June the thirtieth, nineteen hundred and seventy six to provide for supplementing certain existing appropriations and for certain new activities and projects.
Chapter 167	An Act authorizing the Town of Amesbury to extend the time for borrowing a certain sum of money in anticipation of federal grants for the construction of a sewerage treatment plant.
Chapter 172	An Act further regulating the use of state-owned motor vehicles.
Chapter 199	An Act making appropriations for the fiscal year ending June the thirtieth, nineteen hundred and seventy six to provide for supplementing certain existing appropriations and for certain new activities and projects.
Chapter 230	An Act authorizing the appropriation of certain funds of the City of Brockton previously raised by bond issue.

Chapter 249	An Act authorizing the distribution of personal data to certain professional associations and organizations by agencies of the Commonwealth under the law relative to fair information practices.
Chapter 257	An Act authorizing the Town of Royalston to renew certain state and federal aid anticipation notes.
Chapter 283	An Act making appropriations for the fiscal year nineteen hundred and seventy seven, for the maintenance of the departments, boards, commissions, institutions and certain activities of the Commonwealth for interest, sinking fund and serial bond requirements and for certain permanent developments.
Chapter 296	An Act providing that the Board of Sewer Commissioners in the Town of Barnstable be known as the Water Pollution Control Board.
Chapter 347	An Act directing the Department of Environmental Quality Engineering to control the disposal of certain dredge material.
Chapter 350	An Act authorizing the City of Fitchburg to renew certain federal and state aid anticipation notes.
Chapter 367	An Act making a corrective change in the law providing for an environmental capital outlay program for the Commonwealth.
Chapter 369	An Act establishing a South Essex Ocean Sanctuary.
Chapter 373	An Act authorizing the Town of Lexington to construct and maintain a sanitary sewer on land in said Town under the jurisdiction of the conservation commission.
Chapter 386	An Act authorizing the City of Brockton to refund certain federal aid anticipation notes.
Chapter 397	An Act making clarifying changes in the law regulating meetings of governmental bodies.
Chapter 407	An Act relative to the connection of a sewerage line in a certain portion of the Town of Danvers.
Chapter 408	An Act authorizing the Town of North Reading to obtain water from the Ipswich River.
Chapter 411	An Act further regulating judicial review under the law relative to state administrative procedure.
Chapter 424	An Act providing for the construction of certain drainage and flood control facilities by the Metropolitan District Commission in a certain section of the City of Malden.

Chapter 425	An Act authorizing the Metropolitan District Commission to do certain additional work in the City of Quincy in connection with its sewerage program.
Chapter 437	An Act authorizing the Town of Wakefield to construct certain public sewers.
Chapter 443	An Act extending the time within which the Town of Amesbury may borrow the sum of two hundred and thirty thousand dollars in anticipation of state grants for the construction of the sewerage treatment plant.
Chapter 456	An Act authorizing the Town of Ipswich to obtain water from the Ipswich River.
Chapter 459	An Act providing for a Massachusetts register and code of Massachusetts regulations.
Chapter 468	An Act further regulating the Energy Facilities Siting Council.
Chapter 479	An Act supplementing the General Appropriations Act for the fiscal year nineteen hundred and seventy seven and certain new activities and projects.
Chapter 480	An Act supplementing certain items in the General Appropriations Act for the fiscal year nineteen hundred and seventy seven and providing for certain new activities and projects.
Chapter 481	An Act providing for a capital outlay program for the Commonwealth.
Chapter 482	An Act authorizing the Town of Wilbraham to borrow money to repay certain federal aid anticipation notes.
Chapter 527	An Act regulating the expenditures of funds for the repair of state owned motor vehicles.
Chapter 538	An Act authorizing the Town of Weston to join with the City of Waltham in the construction of the Bear Hill Valley relief sewer and to lay out, construct and operate a sewer force main in the City of Waltham connecting with said Bear Hill Valley relief sewer.
Chapter 553	An Act directing the Department of Mental Health to convey certain lands in the Town of Norton to the Town of Mansfield for the purpose of construction of a sewage treatment plant and related improvements.
Chapter 20	Resolve providing for an investigation and study by the Department of Environmental Quality Engineering through its Division of Waterways relative to various dredging and construction projects.
Chapter 26	Resolve increasing the membership and scope of the special commission established to make an investigation and study relative to the regulation of the location and operation of electric utility generation and transmission facilities and other matters.

Acts of 1977

Chapter 1	An Act validating certain proceedings taken at certain town meetings in the Towns of Franklin and Medway concerning the Charles River Pollution Control District.
Chapter 8	An Act authorizing the City of New Bedford to renew certain state aid anticipation notes.
Chapter 9	An Act authorizing the City of New Bedford to renew certain federal aid anticipation notes.
Chapter 31	An Act authorizing the acquisition of land and easements in the Town of Marblehead by the South Essex Sewerage District for the construction of certain sewerage facilities.
Chapter 99	An Act requiring a two thirds vote by the Upper Blackstone Water Pollution Abatement District on certain matters and authorizing the Upper Blackstone Water Pollution Abatement District to accept and treat sewage from domestic sanitary sewerage.
Chapter 120	An Act providing that one member of the Water Resources Commission be a representative of the groundwater industry.
Chapter 124	An Act authorizing the Town of Groveland to extend its sewerage system into and through land of the Pentucket School District in the Town of West Newbury.
Chapter 125	An Act exempting certain employees of the Greater Lawrence Sanitary District from the provisions of civil service laws and rules.
Chapter 139	An Act relative to qualifications for promotional appointments of certain temporary appointments.
Chapter 167	An Act providing for labor representation on the Energy Facilities Siting Council.
Chapter 172	An Act relative to the methods of apportioning sewerage construction costs in the Town of Walpole.
Chapter 194	An Act authorizing the Town of Bedford to construct and maintain a sanitary sewer on land in said town under the jurisdiction of the conservation commission.
Chapter 206	An Act relative to the financing of certain pollution control industries in the industrial development of cities and towns by industrial development of cities and towns by industrial development financing authorities.
Chapter 249	An Act authorizing the conveyance by the Department of Public Works to the Town of Huntington of an easement in land of said town for a sewerage system.

Chapter 250	An Act authorizing the conveyance by the Department of Public Works for the Town of Huntington of land and an easement in land of said town for a sewerage treatment plant site and access road thereto.
Chapter 268	An Act authorizing the town of Danvers to obtain water form the Ipswich River.
Chapter 269	An Act relative to the terms of certain bonds and notes to be issued by the Commonwealth.
Chapter 271	An Act making available a certain appropriation for the purpose of certain dredging activities.
Chapter 285	An Act authorizing the Town of Mansfield to take by eminent domain an easement in certain land in the Town of Norton for sewerage purposes.
Chapter 290	An Act authorizing the City of Fitchburg to use a portion of conservation land for the purpose of constructing a sewer line in said city.
Chapter 291	An Act regulating the first inspection of a pressure vessel.
Chapter 296	An Act prohibiting the construction of additional sewerage facilities or any landfill operation at Nut Island in the City of Quincy.
Chapter 300	An Act making appropriations for the fiscal year ending June the thirtieth, nineteen hundred and seventy seven to provide for supplementing certain existing appropriations and for certain new activities and projects.
Chapter 301	An Act extending the time which the Town of Amesbury may borrow monies in anticipation of federal grants.
Chapter 302	An Act extending the time which the Town of Amesbury may borrow monies in anticipation of state grants.
Chapter 320	An Act authorizing the Town of Medfield to acquire permanent sewer easement on land being held by the Trust of Reservations in said town.
Chapter 330	An Act authorizing the Town of Maynard to extend the time for borrowing a certain sum of money in anticipation of federal grants for the construction of a sewage treatment plant.
Chapter 331	An Act permitting the purification of contaminated shellfish by plants or by methods approved by the Commissioner of Environmental Quality Engineering.
Chapter 336	An Act relative to the procedures for issuing bonds and notes of the Commonwealth.

Chapter 337	An Act validating certain actions taken by the Town of Great Barrington and authorizing said Town to issue federal and state grant anticipation notes.
Chapter 360	An Act relative to borrowing by the Town of Wareham for economic development purposes.
Chapter 361	An Act making appropriations for the fiscal year nineteen hundred and seventy eight for the maintenance of the departments, boards, commissions, institutions and certain activities of the Commonwealth for interest, sinking fund and serial bond requirements and for certain permanent improvements.

OPERATION AND MAINTENANCE SECTION

Consistently good operation and maintenance at wastewater treatment facilities is necessary if an effective pollution abatement program is to be a reality. The most effectively designed plant will not function satisfactorily if it is not properly operated and maintained. The most difficult problems arise with the older plants, which are outmoded and/or overloaded. Although these plants are scheduled for replacement or upgrading, in some instances it may take up to six years for this to be accomplished. Our goal in this interim period is to require optimum utilization of existing facilities as well as the addition of any other units as necessary to ensure proper treatment.

The tools which this Division has at its disposal to ensure proper operation and maintenance include:

1.) Plant Inspections

Treatment plants are periodically inspected by our field engineers to determine if proper operation and maintenance is being provided. These inspections should be conducted monthly, however because of personnel limitations, this is not being accomplished.

2.) Operator Training

Operator training under the Research and Training Section is continuing on a full-time basis to provide basic and advanced treatment plant operator training.

3.) Monthly Operating Records

These reports indicate the treatment efficiencies which a plant is achieving. By providing important operating data, the Regional Engineer can be alerted to existing or potential problems.

4.) Mandatory Operator Certification

This program will allow for more direct control over the personnel operating wastewater treatment plants. It also provides assurances that plant operators have satisfactory training and experience to carry out their responsibilities.

5.) Refusal to Approve Applications for Sewer Extensions and Connections.

Sewer extensions are not permitted in municipalities where problems exist in the collection system, treatment facilities or receiving water courses, unless the community is implementing a satisfactory pollution abatement program.

6.) Rules and Regulations for Operation and Maintenance of Sewerage Systems and Waste Treatment Facilities.

These rules and regulations have been filed with the Secretary of State and are presently in force. They define what is considered proper operation and maintenance and improve regulation of waste treatment systems.

7.) Permit Discharge Program

This program requires a permit for all wastewater discharges into the waters of the Commonwealth. This joint Federal-State permit establishes effluent limitations which the treatment plant discharge must meet.

8.) Technical Assistance

In instances where a treatment plant is experiencing severe operation problems, field engineers may spend several days or more at such a facility providing technical assistance to plant personnel.

9.) Sewer Use Ordinances

Every municipality must adopt suitable and complete rules and regulations for the control and regulation of the use of public sewerage systems. These rules and regulations not only provide for protection of the sewerage system, but also ensure that any wastes discharged to said system do not interfere with satisfactory treatment plant performance. This Division has the responsibility for requiring that the various municipalities enforce these regulations.

Due to the expansion of this Division's Construction Grants Program, there is no longer a formal Operation and Maintenance Section in the central office. Those activities which used to be handled by that section, as partially enumerated below, have been reassigned to the Construction Grants Section within the Division as well as to the regional offices.

1.) Supervision of regional office treatment plant inspection programs.

2.) Development and coordination of pollution abatement programs for state-owned wastewater treatment facilities.

3.) Review sewer connection/extension applications.

4.) Provide technical assistance to the Board of Certification of Treatment Plant Operators.

5.) Review and approve engineering reports and plans-specifications for private wastewater treatment facilities.

6.) Review and approve laboratory facilities for proposed municipal wastewater treatment plants.

7.) Conduct studies for evaluating the adequacy of salary levels and job classification of state treatment plant operators. Where inadequacies exist, to work with the Bureau of Personnel and Standardization and Civil Service in order to elevate these positions to their proper level.

8.) Review and approve Operation/Maintenance Manuals.

9.) Provide technical assistance to the enforcement section.

It is unfortunate that the Division still does not have sufficient staffing to conduct an effective Operation and Maintenance Program. This situation will become more acute due to the major treatment plant construction program which is presently underway. Major emphasis must be expended in strengthening this important program in order to protect our investments and enhance the quality of water resources.

SUMMARY OF WASTEWATER TREATMENT PLANTS
JUNE 30, 1977

CATEGORY	PRIMARY		PRIMARY PLUS SAND FILTRATION		ACTIVATED SLUDGE		EXTENDED AERATION		TRICKLING FILTER		ADVANCED TREATMENT		TOTAL	
	EXIST	U.C.	EXIST	U.C.	EXIST	U.C.	EXIST	U.C.	EXIST	U.C.	EXIST	U.C.	EXIST	U.C.
MUNICIPAL	15	1	7	—	12	12	46	7	16	—	7	6	103	26
MDC	3*	1*	—	—	—	—	—	—	1	—	—	—	4	1
STATE INSTITUTION	—	—	10	—	—	—	7	—	3	—	—	—	20	—
PRIVATE	2	—	21	—	—	—	24	—	1	—	1	—	49	—
COUNTY	—	—	5	—	—	—	1	—	—	—	—	—	6	—
FEDERAL	4	—	4	—	1	—	2	—	3	—	—	—	14	—
MASS. TURNPIKE	—	—		—		—	3	—	—	—	—	—	3	—
TOTALS	24	2	47	—	13	12	83	7	24	—	8	6	199	27

U.C. = Under Construction as of July 1977
* includes the Chlorination/Detention Facilities

INDUSTRIAL WASTES

Section 27(13) of the Massachusetts Clean Waters Act assigns the Division of Water Pollution Control the responsibility for approving reports and plans of pollution abatement facilities and inspecting their construction for conformance with the approved plans. During Fiscal 1977 the Division reviewed 34 engineering reports on industrial waste treatment, of which the following 20 were approved:

Si Ni Chro Co., Newburyport
Atlas Tack Co., Fairhaven
Fenewal Corp., Ashland
Boston Edison-Edgar Station, Weymouth(2 reports)
Newburyport I.W. Report
Brockton I.W. Report
Franklin I.W. Report
Recycling Industries, Braintree
Scituate W.T.P.
American Optical, Southbridge
M.D.C. - I.W. Report (2 reports)
SRPEDD - I.W. Report 5.2
SRPEDD - I.W. Report 5.3
Borden Chemical, Leominster
I.C.I., Dighton
Joan Fabrics, Lowell
Gloucester Fish Processing
F.B. Rogers Silver - Taunton

Final plans submitted by 42 companies were reviewed, and 29 were approved:

Newburyport W.T.P.
Boston Edison - L Street
Coastal Metal Finishing, Merrimac
Liquid Waste Specialists, Auburn
Helsinger, Plainville
Stevens Paper - Lower Mill
Smith & Wesson, Springfield
Garelick Farms, Franklin
LeBaron Foundry - Brockton
L.S. Starrett, Athol
Foster Metal Products, Attleboro
Defiance Bleachery, Norton
Dante, Inc., Attleboro
Taunton Silversmith, Taunton
Cabot, Chelsea
Whiting and Davis, Plainville
Defiance Bleachery (P.S. #2), Norton
Solar Power, Billerica
Foxboro Co., Foxboro
Webster Lens, Webster

Whitman Plating, Whitman
Microfab, Amesbury
Stevens Paper, Westfield
Ventron, Danvers
Si Ni Chro, Newburyport
Massport, Boston
Cott Corp., Millis
Boston Edison, Edgar Station
Esleeck Mfg., Montague

In the course of reviewing reports and plans, 110 technical meetings were held with industries and their consultants. In addition, 52 preliminary and final inspections were made to determine conformance of treatment facilities with approved reports and plans. Numerous meetings were held with the Attorney General's Office in conjunction with enforcement actions.

Chapter 63, Section 38D, and Chapter 59, Section 5, Clause 44, of the General Laws provide certain tax benefits to industries installing pollution abatement facilities. Companies wishing to apply for these benefits require certification from this Division that the facilities are effective in controlling water pollution to an acceptable level. During Fiscal 1977 three companies received certification of treatment facilities having a total capital cost of $540,583.

The Division of Water Pollution Control, under Section 13.1.2 of the State Plumbing Code, has the responsibility of reviewing and approving plans for acid waste treatment system to ensure proper and adequate neutralization of these special wastes. During Fiscal 1977, the Division approved plans for 25 acid waste treatment systems.

OIL POLLUTION CONTROL & HAZARDOUS WASTES

Chapter 648 of the Acts of 1968 directed the Division of Water Pollution Control to "undertake immediately" whenever there is spillage, seepage of filtration of oil into any of the waters of the Commonwealth or into any off-shore waters which may result in damage to the beaches or coastal areas, to cause said spillage, seepage or filtration to be contained and removed by whatever method it considers best and most expedient under the circumstances to safeguard the quality of the water." The Director of the Division was authorized to expend up to $100,000 per fiscal year to carry out the provisions of the Act.

Chapter 827 of the Acts of 1970 strengthened the law by increasing the amount which may be expended (subject to further appropriation) and by providing absolute liability for clean-up costs by the person responsible for an oil spill.

The great majority of oil spills are cleaned up by the person responsible for the spillage. Costs for these clean-ups are averaging several million dollars annually. Only in cases where the origin is unknown or the person responsible fails to act does the Division initiate clean-up. Clean-up services are provided by a contractor performing under established unit rates. For the last several years, the Coast Guard has been contracting for oil spill clean-ups on coastal waters on a similar basis under a national revolving fund; this has reduced dependence on the State fund.

The cost of oil spills cleaned up by the Division in Fiscal 1977 under the measures of the Oil Pollution Control Law is $73,992. The total costs incurred in Fiscal Years 1967-1976 (since passage of the law) are $626,511. A total of $106,784 has been recovered to date from persons responsible for some of these spills; claims for $228,528 are still pending.

In accordance with the rules and regulations for oil pollution filed under Chapter 648, the license applications for 45 marine oil terminals were processed. Inspections of these facilities are conducted yearly.

Hazardous Waste Regulations have been adopted in accordance with Chapter 692 of the Acts of 1970. The purposes of the regulations are to define wastes generated within the Commonwealth that are considered hazardous and that require further control, to specify the manner in which said substances may be handled and to establish controls on disposal sites and disposal methods for such wastes. In all instances, the recovery of recycling of such wastes to useful products with minimum production of by-product wastes is preferred.

The scope of the regulations is intended to cover handling and disposal methods involving conveyance of hazardous wastes by truck, rail or vessel from a point of origin to an "off-site" disposal area on land or in water.

Currently a licensing system is utilized to regulate the conveyance, storage and disposal of hazardous waste materials within the Commonwealth by both in-state and out-of-state firms. During Fiscal 1977 the Division processed 121 hazardous waste license applications; approving 113 applications for licensing and rejecting 8 applications. In addition, 14 licenses were amended to include new provisions subsequent to inspections of facilities.

An accelerated inspection program of all hazardous waste facilities was conducted by the Division. In addition, forty-three technical meetings and hearings were held in order to administer this program.

During Fiscal 1977, the Division initiated action in order to obtain from the U.S. Environmental Protection Agency authorization to administer in Massachusetts the subtitle for hazardous waste management under the Resource Conservation and Recovery Act (PL 94-580).

Toward this end, the Division developed a work plan which included the establishment of uniform inspection procedures and a tracking system to account for the quantities and disposal methods for each type of hazardous waste. Further, a review and evaluation of the existing hazardous waste program was under taken with the intent of identifying action needed to conform and become authorized under PL 94-580. Many meetings were held with E.P.A. to coordinate State and Federal activities for this program.

MUNICIPAL WASTEWATER FACILITIES

CONSTRUCTION PROGRAM

Under the Massachusetts Clean Waters Act of 1966, the State Legislature established a program to assist communities in the Construction of needed wastewater treatment facilities. A state grant program was enacted under two bonds issues to provide matching grants to the federal grants made under the Federal Water Pollution Control Act.

Under Chapter 546 of the Acts of 1974 and the Federal Water Pollution Control Act Amendments of October 18, 1972 (Public Law 92-500), the present state-federal construction grant program can be summarized as follows:

	STATE GRANT	FEDERAL GRANT
Comprehensive Planning	$15,000.	0
Facilities Planning - Step I	0	75% of Eligible Cost
Final Plans & Specifications - Step II	25% of Eligible Cost	75% of Eligible Cost
Construction - Step III	15% of Eligible Cost	75% of Eligible Cost
Reimbursement	Special Projects	Special Projects

The work of the Municipal Wastewater Facilities Construction Program can best be broken down as follows:

1.) Review and approval of Engineering Reports and facilities planning for municipalities and district.

2.) The review and approval of final contract plans and specifications of municipal wastewater collection and treatment facilities.

3.) Review and approval of bidding procedure and award of contracts for the construction of municipal wastewater collection and treatment projects.

4.) Inspections of the construction work and review and approval of change orders, extra work orders, and supplemental agreements to the contracts.

5.) Review of Federal Applications and Certification of State Priority.

6.) Review and approval of State Grant Applications for the planning and construction of needed wastewater treatment facilities.

7.) Review and approval of Invoices of Payments of the State Grants to Cities, Towns, & Districts.

8.) Reimbursement to Cities and Towns under local aid.

ENGINEERING REPORTS AND FACILITIES PLANNING PROJECTS

APPROVED DURING FISCAL YEAR 1977

MUNICIPALITY	PROJECT	APPROVAL DATE
Fall River	S.T.P. Expansion	July 26, 1976
Oxford-Rochdale	Interceptors and Laterals	August 11, 1976
Montague	T.P. Expansion, Rehab. Coll.	October 25, 1976
Brockton	WWTP	October 28, 1976
Northborough	Coll. System	November 3, 1976
Hardwick	Coll. and S.T.P.	November 15, 1976
Lee	Coll. WT., P.S. and F.M.	November 15, 1976
Marshfield	Coll. and S.T.P.	November 17, 1976
Stockbridge	Supplemental Report	December 28, 1976
Barre	WWTP	January 20, 1977
Quincy	Faxon Park P.S. and Int.	January 7, 1977
Stoughton	Inter. Lat. Sewers	February 17, 1977
Worcester	Improvements to Combined Sewerage System	February 11, 1977
Pittsfield	Holmes Road	March 15, 1977
Pittsfield	Pecks Road Area	March 15, 1977
Oxford-Rochdale	Oxford-Coll.	March 24, 1977
East Longmeadow	Allen St. Coll.	March 8, 1977
Williamstown	College Area Interceptor	April 27, 1977
Bedford	Wastewater Collection	April 22, 1977
Methuen	Wastewater Facilities Plan	April 27, 1977

MUNICIPALITY	PROJECT	APPROVAL DATE
Groveland	Cemetery Brook - East Sewerage System Sections	April 12, 1977
Leominster	Report on Evaluation of Existing Sewage System and Treatment Plant	January 20, 1977
Erving	Wastewater Treatment Facilities - Erving Center Millers Falls and Village of Farley	May 1, 1977
Williamsburg	Updated Report - Wastewater Collection	May 11, 1977
Revere	Facilities Plan	May 11, 1977
M.D.C.	Weymouth - Fore River Siphon	May 20, 1977
Marlborough	Brighton St./Leolis Drive	May 26, 1977
Clarksburg	Sewers	June 1, 1977
Ludlow	Electric Park Sewers	June 1, 1977
Malden	Area B.	June 22, 1977
Malden	Route 60 Interceptor	June 22, 1977
South Essex S.D.	Phase III	June 3, 1977
Duxbury	Sewers for Duxbury Beach	June 29, 1977

FINAL CONTRACT PLANS AND SPECIFICATIONS REVIEWED AND APPROVED DURING FISCAL YEAR 1977

MUNICIPALITY	PROJECT	APPROVAL DATE
Grafton	W.W.T.P., Contract #1	7-6-76
Grafton	Maplewood, Quinsigamond, & Blackstone, Contract #2	7-6-76
Grafton	Maplewood Int., N & S Grafton Laterals, Contract #3	7-6-76
Grafton	Grafton Center Laterals, Contract #4	7-6-76
Grafton	Worcester & Farnumsville P.S. & F.M., Contract #5	7-6-76
Amesbury	Powow River Int., Merrimac & Main St. Int.	7-19-76
Reading	Willow Street Interceptor	8-3-76
Reading	Sewer System Improvement	8-3-76
Newburyport	Sanitary Sewers & P.S., Contract #1	8-11-76
Newburyport	Hale St. P.S. Contract #2	8-11-76
Newburyport	Sewerage Improvements, Contract #3	8-11-76
Newburyport	Collecting Sewers, Contract #4	8-11-76
Upton	Sanitary Sewers, Contract #1	8-18-76
Upton	Center Brook P.S., Contract #2	8-18-76
Upton	Sanitary Sewers, Upton Center, Contract #3	8-18-76
Cambridge	Phase III, Contract #2	8-20-76
Cambridge	Phase III, Contract #3	8-20-76
Somerset	Pumping & Ejector Stations, Contract #12	8-30-76
Somerset	Storm & Storm Drains, Contract #14	8-30-76
Somerset	Sewers, Contract #15	8-30-76
Holyoke	W.W.T.P., Contract #6	8-12-76
Agawam	Sanitary Sewers, North St., Phase 1, Contract #1	9-16-76
Agawam	Wastewater P.S., Phase 1, Contract #2	9-16-76
Palmer	W.W.T.P.	9-16-76
Charles River PCD	Charles River Int., WWTP, Outfall, Contract #2	9-20-76
Palmer	Palmer Inter., Contract #1	9-28-76
Palmer	Thorndike-Bondsville Int., Contract #2	9-28-76
Palmer	Three Rivers Int., Contract #3	9-28-76
Palmer	P.S. 1 & 2, Contract #4	9-28-76
Palmer	P.S. 3, 4, & 5, Contract #5	9-28-76
Tyngsboro	Int. & Laterals, Contract #1	10-12-76
Groveland	Laterals, Contract 73-3	10-20-76
Groveland	Laterals, Contract 73-4	10-20-76
South Hadley	Int., Contract #1	10-26-76
South Hadley	P.S., Contract #2	10-26-76
South Hadley	WWTP, Contract #3	10-28-76

MUNICIPALITY	PROJECT	APPROVAL DATE
Upton	Laterals, Contract #4	11-8-76
Uxbridge	WWTP, Contract #1	11-16-76
Uxbridge	Int., Contract #2	11-16-76
Uxbridge	Int., Contract #3	11-16-76
Uxbridge	Laterals, Contract #4	11-16-76
Uxbridge	Laterals, Contract #5	11-16-76
Uxbridge	Laterals, Contract #6	11-16-76
Wilmington	Int., Contract #1	11-18-76
Wilmington	Int., Contract #2	11-18-76
Wilmington	Int., & Laterals, Contract #3	11-18-76
Wilmington	Int. & Laterals, Contract #4	11-18-76
Wilmington	Int., Laterals & F.M., Contract #5	11-18-76
Wilmington	Int., & Laterals, Contract #6	11-18-76
Wilmington	P.S., Contract #7	11-18-76
Holbrook	Laterals, Contract #4	11-23-76
Auburn	Main & Lateral Sewers, Contract #14	12-2-76
Auburn	Main & Lateral Sewers, Contract #15	12-2-76
Auburn	Main & Lateral Sewers, Contract #16	12-2-76
Auburn	Main & Lateral Sewers, Contract #17	12-2-76
Auburn	Laterals & F.M., Contract #18	12-2-76
Auburn	Pump Stations, Contract #19	12-2-76
Huntington	WWTP, Contract #1	12-14-76
Huntington	Outfalls & Interceptor	12-14-76
Huntington	Street Sewers	12-14-76
Amherst	University Drive Interceptor	12-22-76
Cambridge	Separation, Phase III	12-22-76
Wrentham	State Hospital, WWTP	12-22-76
Fairhaven	Int., F.M., Sewers, P.S., Contract 5-9	1-31-77
Upper Blackstone WPAD	Phosphorus Removal	3-29-77
Dracut	Contract #1 Beaver Brook Inter. & Brook Crossing	4-11-77
Dracut	Contract #2 Sewers	4-11-77
Dracut	Contract #3 Sewers	4-11-77
Dracut	Contract #4 Sewers	4-11-77
Dracut	Contract #5 Sewers	4-11-77
Dracut	Contract #6 Sewers	4-11-77
Dracut	Contract #7 Sewers	4-11-77
Dracut	Contract #8 Sewers	4-11-77
Dracut	Contract #9 Pumping Station & Metering Station	4-11-77
Dracut	Contract #10 Merrimac Ave. Inter & Lateral Sewers	4-11-77
Middleborough	Contract 76-1, 76-2 Sewer Rehabilitation	4-15-77
Nantucket	Renovations to Sea Street P.S.	4-14-77
Randolph	Contract 31-34-Interceptors, Laterals, F.M., Ejector Station	4-27-77
Springfield	Clinton Street Sand Removal Facility	4-4-77

MUNICIPALITY	PROJECT	APPROVAL DATE
Amherst	West Street P.S.	4-14-77
Hinsdale	Sewers	4-4-77
Williamstown	College Area Interceptor	4-27-77
Barnstable	Contract #1 S.T.P.	5-13-77
Barnstable	Contract #2, F.M., Int., Lateral Sewers	5-12-77
Barnstable	Contract #3	5-12-77
Barnstable	Contract #4, Inter., Laterals, F.M., Ejector Station	5-12-77
Barnstable	Contract #5, Freezer Road P.S.	5-12-77
Webster	Sewers, P.S., F.M.	5-2-77
Ludlow	Contract #1, Higher Brook Inter.	5-26-77
Webster	Phase 6, Sewers, P.S., F.M.	5-2-77
Lee	Mt. View Parkview Sewers	5-24-77
Hardwick(Wheelright)	S.T.P. Sewer	5-31-77
Salem	Phase II - Contract A Laterals & P.S.	5-6-77
Marlborough	Brigham Street/Leoleis Drive, Laterals & P.S.	5-26-77
Amesbury	Haverhill Road Interceptor, Lateral & P.S.	5-19-77
M.D.C.	Weymouth Fore River Siphon	5-20-77
Oxford-Rochdale	French River Inter. - Bull Run Brook Inter.	6-15-77
Ludlow	Contract 2 & 3 Higher Brook Inter.	6-15-77
Westfield	State Proj. H 74-6(s) Renovations and Improvements to STP and Western Mass. Hospital	6-28-77
BRA - South End	Contract H-3C Urban Renewal	5-19-77
BRA - South End	Contract H-2W Urban Renewal	5-19-77
BRA - South End	Contract SD-1A Urban Renewal	5-19-77
BRA - South End	Contract H-1 Urban Renewal	5-19-77
BRA - South End	Contract H-2E Urban Renewal	5-19-77
BRA - South End	Contract U-1 Urban Renewal	5-19-77
BRA - South End	Contract H-3T Urban Renewal	5-19-77
BRA - Charlestown	Contract W-1 Urban Renewal	6-24-77
BRA - Charlestown	Contract V-1 Urban Renewal	6-24-77
SESD Danvers-Beverly	Contract 73-10 Interceptor	6-8-77
SESD Danvers-Beverly	Contract 73-11 Interceptor	6-8-77
Rockport	Contract #1	6-14-77
Rockport	Contract #2	6-14-77
Peabody	Contract G-4	6-15-77
Peabody	Contract G1	6-15-77
Peabody	Contract J2	6-15-77
Peabody	Contract J3	6-15-77
Peabody	Contract J4	6-15-77
Peabody	Contract J5	6-15-77
Peabody	Contract D5	6-15-77
Peabody	Contract E2	6-15-77
Peabody	Contract E3	6-15-77
Peabody	Contract E4	6-15-77
Peabody	Contract F4	6-15-77
Peabody	Contract K-3-K-4	6-15-77
Cambridge	Contract #1, Separation, Phase IV	6-22-77
Cambridge	Contract #2 Separation, Phase IV	6-22-77

MUNICIPALITY	PROJECT	APPROVAL DATE
Hull	Contract #9 Sewers	6-15-77
Hull	Contract #10 Sewers & F.M.	6-15-77
Hull	Contract #11 Pumping Station #5	6-15-77
Methuen	Contract #1, Frye R.D. Relief Inter.	6-21-77
Monson	Contracts 1 thru 4	6-15-77
Erving	STP - Sewers	6-6-77
East Longmeadow	Contract #1, P.S.	6-27-77
East Longmeadow	Contract #2 Sewers	6-27-77
Medfield	Contracts #1-4	6-16-77
Attleboro	Contracts #1-12	6-15-77
Mattapoisett	Contracts #1 & 2	6-14-77
Weymouth	Contracts #81-83	6-23-77
Weymouth	Contracts 84-90	6-22-77

REVIEW AND APPROVAL OF BIDDING PROCEDURE AND AWARD OF CONTRACT DURING FISCAL YEAR 1977

MUNICIPALITY	PROJECT	CONTRACT COST	APPROVAL DATE
Marlborough	Ward 6 Sewer, Contract #75-3	$ 593,107.00	8-11-76
SESD	Marblehead P.S., Contract #74-14	1,083,541.00	8-19-76
SESD	Marblehead F.M. & Pressure Sewer, Contract #74-15	420,160.00	8-19-76
SESD	Marblehead F.M. & Pressure Contract #74-16	878,660.00	8-19-76
Hull	Gravity Sewers, Contract #5	514,810.00	9-7-76
Hull	Gravity Sewers, Contract #6	444,992.00	9-7-76
Hull	Gravity Sewer & F.M.	827,323.00	9-7-76
CRPCD	STP, Contract #11	12,989,000.00	10-12-76
CRPCD	Int. & Outfall, Contract #2	3,535,351.00	10-12-76
CRPCD	Mine Brook Int. Contract #3	1,446,325.00	10-21-76
Groveland	Main St. P.S., Contract #73-1	499,598.00	10-25-76
Groveland	F.M. & Laterals, Contract #75-1	626,747.00	10-25-76
MDC	Charles River Marginal Conduit Sewer, Contract #E438	12,325,561.00	11-29-76
Auburn	Sewers, Contract #8	2,337,551.00	12-3-76
Auburn	Sewers, Contract #11	789,512.00	12-3-76
Auburn	Sewers, Contract #12	1,364,656.00	12-3-76
SESD	Marblehead Harbor Crossing, Contract #74-17	2,638,190.00	12-9-76
Newburyport	Sewers, Contract #4	468,202.00	12-17-76
Auburn	Pumping Station, Contract #6	550,823.00	12-21-76
Cambridge	Phase II Sewers, Contract #2	999,869.00	1-25-77
Newburyport	Sewers, P.S., F.M., Contract #1	819,277.00	1-14-77
Newburyport	Hale Street P.S., Contract #2	385,786.00	1-12-77
Somerset	P.S. Contract #12	958,000.00	3-2-77
Somerset	Sewers, F.M., Contract #14	1,075,186.00	2-26-77
Somerset	Sewers, Contract #15	1,324,119.00	2-26-77
Billerica	Sewers, Contract #16	600,955.00	2-28-77
Billerica	Shawsheen P.S., Contract #17	535,200.00	2-7-77
Billerica	Int., F.M., Contract #18	1,170,150.00	2-28-77
Billerica	Int., Lateral, Contract #19	1,722,655.00	2-28-77
Billerica	Sewers, Contract #20	2,502,692.00	3-4-77
Grafton	WWTP, Contract #1	4,999,600.00	3-21-77
Grafton	Inter., Contract #2	2,698,794.00	3-21-77
Grafton	Inter. & Lateral, Contract #3	1,106,833.00	3-21-77
Grafton	Grafton Center Lateral Contract #4	633,689.00	3-21-77

MUNICIPALITY	PROJECT	CONTRACT COST	APPROVAL DATE
Cambridge	Sewerage & Drain Facility, Contract #1	2,394,539.00	3-17-77
Grafton	P.S., F.M., Contract #5	1,182,262.00	4-4-77
Salem	Sewers, Contract B	3,174,920.00	4-12-77
Hull	Sewers, Contract #7	210,106.00	4-14-77
Groveland	sewers, Contract#73-3	545,152.00	4-12-77
Groveland	Sewers, Contract #73-4	443,345.00	4-12-77
Groveland	Interceptors, Contract #75-2	247,327.00	4-12-77
Reading	Interceptor	872,660.00	5-2-77
Reading	Sewer, P.S., F.M.	720,519.00	5-2-77
Medway	Sewers, Contract #75-1	432,748.00	5-26-77
Medway	Sewers, Contract #4	567,050.00	5-26-77
Amherst	University Drive Inter., Contract #7	627,321.00	6-17-77
Amesbury	Merrimac & Main St. Inter., Contract #2	718,017.00	6-8-77
Peabody	Sewers, Contract H4-H5	1,291,333.00	4-28-77
Peabody	Sewers, Contract H3-H6	798,354.00	4-28-77
Peabody	Sewers, Contract F3-G2	799,634.00	4-28-77
Peabody	Sewers, Contract J1	646,479.00	6-20-77
Peabody	Sewers, Contract G3	891,730.00	6-14-77
Sutton	Wilkinsville Sewers, Contract #1A	485,091.00	6-15-77
Sutton	Wilkinsville P.S., Contract #2	349,217.00	6-15-77
Hoosac W.Q. District	Landscaping	6,475.00	5-23-77
Uxbridge	S.T.P., Contract #1	4,742,000.00	6-23-77
Uxbridge	Interceptor, Contract #2	1,201,872.00	6-23-77
Uxbridge	Interceptors, Contract #3	1,075,167.00	6-23-77
Uxbridge	Sewers, Contract #4	1,305,305.00	6-23-77
Uxbridge	Sewers, Contract #5	708,622.00	6-23-77
Uxbridge	Sewers, Contract #6	592,991.00	6-23-77
	TOTAL	$92,897,150.00	

CONSTRUCTION INSPECTIONS MADE DURING FISCAL YEAR 1977

MONTH	TOTAL MUNICIPALITIES	TOTAL CONTRACTS
July	14	15
August	4	5
September	11	20
October	8	14
November	2	9
December	5	6
January	4	9
February	1	1
March	5	8
April	7	12
May	12	25
June	5	12
	78	136

Federal Water Pollution Control Act

Public Law 92-500

On July 1, 1977 $289,118,078. was available for 75 percent federal grants under the Federal Water Pollution Control Act Amendments of 1972. These funds were the funds made available in FY 1976 but not obligated. In addition $27,662,000. was made available for Fiscal Year 1977 under a new appropriation.

The following grants were made during Fiscal Year 1977 - July 1, 1976 to June 30, 1977.

a.)	Facilities Planning - Step I	Eligible Cost	Percent	Federal Grant
313	M.D.C. - Sludge Management	181,000.	75	135,750.
409	Newton	62,000.	75	46,500.
438	Southampton	8,000.	75	6,000.
325	Falmouth	114,000.	75	85,000.
347	Worcester	300,000.	75	225,500.
343	Abington	27,500.	75	20,625.
415	Walpole	55,200.	75	41,400.
525	Norton	51,500.	75	38,625.
395	Ipswich	19,500.	75	14,625.
536	M.D.C. - Nut Island	588,007.	75	441,005.
482	West Bridgewater	59,900.	75	44,925.
359	Greenfield	58,500.	75	43,875.
526	Ashfield	18,485.	75	13,863.
604	Freetown	37,000.	75	27,750.
529	M.D.C. - Rutland-Holden	56,000.	75	42,000.
605	Gloucester	100,750.	75	75,563.
603	Holden	39,100.	75	29,325.
607	Duxbury	20,100.	75	15,075.
491	Belchertown	36,351.	75	27,263.
367	Spencer	43,500.	75	32,625.
507	M.D.C. - Deer Island	833,988.	75	625,491.
405	Medford	111,660.	75	83,475.
494	Springfield	88,318.	75	66,238.
501	Winchester	92,000.	75	69,000.
608	Williamstown	40,300.	75	30,225.
545	Brookfield	14,400.	75	10,800.
609	Charlton	45,748.	75	34,311.
500	Lexington	70,475.	75	52,856.
458	Gloucester	32,500.	75	24,375.
445	South Essex	464,400.	75	348,300.
612	Westport	54,350.	75	40,762.

376	Sturbridge	37,694.	75	28,270.
468	Cohasset	121,249.	75	90,937.
614	Gosnold	14,000.	75	10,500.
336	Leominster	354,234.	75	265,675.
387	Bedford	164,950.	75	123,712.
396	Beverly	118,000.	75	88,500.
616	Salem	55,000.	75	41,250.
620	M.D.C. - Management Study	178,450.	75	133,838.
	TOTAL	$ 4,768,105.		$ 3,576,079.

b.) Final Planning - Step II

		Eligible Cost	Percent	Federal Grant
311	Mattapoisett	125,340.	75	94,005.
503	Melrose	146,500.	75	109,875.
410	Medfield	288,911.	75	171,683.
280	North Attleboro	641,500.	75	481,125.
416	Randolph	316,932.	75	237,699.
358	Lenox	151,400.	75	113,550.
379	Oxford-Rochdale	109,800.	75	82,350.
293	Lowell	1,599,900.	75	1,199,925.
470	Marshfield	484,500.	75	363,375.
471	Rockland	508,670.	75	381,503.
413	Westwood	378,900.	75	284,175.
423	Dartmouth	537,516.	75	403,137.
381	Millbury	156,300.	75	117,225.
366	Ludlow	244,950.	75	183,712.
523	Medway	211,024.	75	158,268.
343	Waltham	710,600.	75	532,950.
573	Franklin	200,800.	75	150,600.
321-2	Montague	245,000.	75	183,750.
398	Manchester	25,290.	75	18,968.
481	Fall River	1,923,525.	75	1,442,643.
515	Fall River	574,075.	75	430,556.
308	Brockton	2,003,808.	75	1,525,356.
563	Medfield	218,301.	75	163,725.
318	Hardwick	61,450.	75	46,088.
562	Millbury	96,220.	75	72,165.
419	Weymouth	133,000.	75	99,750.
606	Weymouth	409,000.	75	306,750.
437	Belchertown	25,704.	75	19,278.
579	Hull	158,950.	75	119,213.
355	Lee	11,215.	75	8,411.
330	Lee	357,728.	75	268,296.
418	Stoughton	153,800.	75	115,350.
447	Northborough	330,350.	75	247,762.
610	Lee	115,199.	75	86,599.

NO.	Municipality	Eligible Cost	Percent	Federal Grant
317	Gill	91,548.	75	68,661.
386	Ashland	75,000.	75	56,250.
296	Northampton	1,226,400.	75	919,800.
364	Chicopee	120,990.	75	90,742.
561	Marlborough	105,000.	75	78,750.
584	Palmer	100,410.	75	75,307.
528	Agawam	180,780.	75	135,585.
538	Templeton	169,034.	75	126,775.
316	Barre	148,000.	75	111,000.
323	Ayer	760,885.	75	570,663.
372	East Longmeadow	272,128.	75	204,096.
	TOTAL	$ 16,876,333.		12,657,246.

c.) Construction - Step III

No.	Municipality	Project	Eligible Cost	Percent	Federal Grant
380	Auburn	PS-FM-Int.	6,674,000.	75	5,005,500.
339	Haverhill	Int.	552,244.	75	414,183.
350	Cambridge	Separation	767,784.	75	575,838.
290	Sutton	PS-Int.	1,369,270.	75	1,026,953.
271	Grafton	PS-Int-FM-T	12,884,972.	75	9,663,729.
391	Newburyport	PS-Int-FM-Coll	4,117,261.	75	3,087,946.
452	Amesbury	PS-Int-FM	2,163,600.	75	1,662,700.
425	Somerset	PS-FM	4,903,442.	75	3,677,582.
351	Cambridge	Separation	4,150,370.	75	3,112,778.
383	Upton	PS-Int-FM-Coll	1,412,344.	75	1,059,258.
397	Peabody	PS-Int-FM	3,915,357.	75	2,938,517.
399	Salem	Int	4,138,696.	75	3,104,022.
401	Reading	PS-Int-FM	1,650,245.	75	1,237,684.
411	Medway	Coll	2,007,155.	75	1,505,366.
541	Upton	Coll	467,323.	75	350,492.
318-2	Hardwick	T-PS-FM-Coll	739,096.	75	554,322.
366-2	Ludlow	Int-Coll	2,582,400.	75	1,936,800.
410-2	Medfield	Int-Coll	4,644,204.	75	3,483,153.
379-2	Oxford-Rochdale S.D.	Int-Coll	1,357,186.	75	1,017,890.
332-2	Monson	Coll-Int-PS-FM	8,829,211.	75	6,621,908.
394-2	Rockport	Int-PS-FM	1,862,900.	75	1,397,175.
311-2	Mattapoisett	PS-FM-Int-Coll	2,323,884.	75	1,742,913.
355-2	Lee	Coll	135,340.	75	101,505.
374	Agawam	PS-FM-Int-Coll	1,611,400.	75	1,208,550.
289-2	Uxbridge	T-Int-PS-FM-Coll	10,773,000.	75	8,079,750.
315	Fairhaven	PS-FM-Int-Coll	4,153,000.	75	3,114,750.
342	Wilmington	PS-FM-Int-Coll	5,695,160.	75	4,271,370.

No.	Municipality	Project	Eligible Cost	Percent	Federal Grant
333-2	Amherst	Int	880,890.	75	660,667.
279-2	Palmer	T-Int-PS-FM	15,587,883.	75	11,893,412.
324	Lancaster	Int-Coll-PS-FM	2,182,635.	75	1,636,976.
531	Auburn	Coll-PS-FM	5,545,935.	75	4,159,451.
298	South Hadley	T-Int-FM	8,323,235.	75	6,242,426.
533	Cambridge	Separation	498,328.	75	373,746.
424	Barnstable	T-Int-PS-Coll	15,350,820.	75	11,513,115.
319-2	Huntington	T-Int-Coll	902,830.	75	677,122.
416-2	Randolph	Int-Coll-PS	4,572,142.	75	3,429,106.
295-2	Attleboro	T-PS-Int-Coll	29,390,548.	75	22,042,911.
377	Webster	PS-FM-Int-Coll	3,120,791.	75	2,340,593.
570	Webster	Coll-PS-FM	1,153,955.	75	865,466.
		TOTAL	$ 183,660,836.	75	$ 137,745,625.

		Eligible Cost	Federal Grant
Summary -	Step I	4,768,105.	3,576,079.
	Step II	16,876,333.	12,657,246.
	Step III	183,660,836.	137,745,625.
	TOTAL	205,305,274.	153,978,950.

STATE CONSTRUCTION GRANTS - WATER POLLUTION CONTROL

FISCAL YEAR 1977

a.) State Grant Advances for Final Contract Plans and Specifications for Wastewater Treatment Facilities.

NO.	MUNICIPALITY	EST. TOTAL COSTS	%	STATE ADVANCE
311	Mattapoisett	1,876,000.	1.49	23,561.
503	Melrose	1,293,000.	1.16	15,000.
410	Medfield	3,591,490.	1.61	57,825.
280	North Attleboro	12,155,000.	1.28	155,500.
416	Randolph	5,000,000.	1.46	72,825.
358	Lenox	2,410,000.	1.78	43,000.
379	Oxford-Rochdale	1,164,500.	2.02	23,550.
293	Lowell	26,299,000.	1.42	372,250.
470	Marshfield	8,345,263.	1.29	107,250.
471	Rockland	7,500,000.	1.56	115,918.
413	Westwood	4,948,000.	1.86	92,100.
423	Dartmouth	6,067,500.	2.19	133,109.
381	Millbury	2,535,000.	1.5	39,075.
366	Ludlow	2,381,000.	2.21	52,575.
523	Medway	2,225,000.	2.37	52,756.
343	Waltham	8,623,000.	1.69	145,900.
573	Franklin	2,895,000.	1.73	50,200.
321-2	Montague	2,485,000.	2.35	58,500.

NO.	MUNICIPALITY	EST. TOTAL COSTS	%	STATE ADVANCE
398	Manchester	403,000.	1.29	5,198.
481	Fall River	24,165,000.	1.71	413,500.
515	Fall River	5,935,000.	1.71	101,250.
308	Brockton	15,693,000.	1.59	250,000.
563	Medfield	3,381,000.	1.47	40,608.
318	Hardwick	581,000.	1.9	11,025.
562	Millbury	2,281,000.	1.05	24,055.
419	Weymouth	2,243,000.	1.44	32,250.
606	Weymouth	6,210,700.	1.61	100,000.
437	Belchertown	180,000.	2.73	4,941.
579	Hull	1,900,760.	1.90	36,180.
355	Lee	154,750.	1.68	2,593.
418	Stoughton	1,460,000.	1.90	27,750.
330	Lee	4,421,875.	2.8	75,398.
447	Northborough	4,220,000	1.90	80,000.
610	Lee	1,376,100	2.09	28,800.
317	Gill	681,600.	2.77	18,855.
386	Ashland	885,400.	2.08	18,425.
296	Northampton	16,797,000.	1.28	215,450.
364	Chicopee	1,200,000.	2.48	29,776.
561	Marlborough	1,314,500.	1.79	23,500.
584	Palmer	1,110,000.	2.20	24,366.
528	Agawam	1,773,000.	2.15	38,126.
538	Templeton	2,654,800.	1.52	40,399.

NO.	MUNICIPALITY	EST. TOTAL COSTS	%	STATE ADVANCE
316	Barre	1,591,400.	1.93	30,750.
372	East Longmeadow	3,199,600.	1.93	61,956.
332	Monson	6,402,000.	1.41	89,886.
	TOTAL	$ 213,939,238.		$ 3,444,931.

b.) Construction Grants made in Fiscal Year 1977

NO.	MUNICIPALITY	PROJECT	EST. TOTAL COSTS	%	STATE GRANT
380	Auburn	P.S., F.M., Int. Sewers	6,674,000.	15	1,001,100.
339	Haverhill	Int.	552,244.	15	82,837.
350	Cambridge	Separation	767,784.	15	115,168.
290	Sutton	P.S. Int. - Sewers	1,369,270.	15	205,390.
271	Grafton	P.S., Int., F.M., T., Sewers	12,884,972.	15	1,932,746.
391	Newburyport	Int., P.S., F.M., Sewers		15	
391	Newburyport	Int., P.S., F.M.	4,117,261.	15	617,589.
452	Amesbury	Int., P.S., F.M.	2,163,600.	15	324,540.
425	Somerset	P.S., F.M., Sewers	4,903,442.	15	735,516.
351	Cambridge	Separation	4,150,370.	15	622,555.
383	Upton	P.S., Int., F.M. Sewers	1,412,344.	15	211,851.
397	Peabody	P.S., Int., F.M. Sewers	3,915,357.	15	587,304.
399	Salem	Int.	4,138,696.	15	620,804.
401	Reading	P.S., Int., F.M. Sewers	1,650,245.	15	247,537.
411	Medway	Sewers	2,007,155.	15	301,073.
541	Upton	Sewers	467,323.	15	70,098.
318	Hardwick	Sewers, P.S., F.M., T	800,546.	15	120,081.
366	Ludlow	Int., Sewers	2,827,350.	15	424,102.

NO.	MUNICIPALITY	PROJECT	EST. TOTAL COSTS	%	STATE GRANT
410	Medfield	Int., Sewers	4,873,115.	15	730,967.
379	Oxford-Rochdale	Sewers, Int.	1,469,686.	15	220,452.
332	Monson	Int., Sewer, P.S.	9,194,930.	15	1,379,239.
394	Rockport	Int, Sewer, P.S. F.M.	2,111,300.	15	316,695.
311	Mattapoisett	P.S., F.M., Int., Sewers	2,468,714.	15	370,307.
355	Lee	Sewers	146,555.	15	21,983.
374	Agawam	P.S., F.M., Sewers	1,611,400	15	241,710.
289	Uxbridge	T., Int., F.M. P.S., Sewers	10,773,000.	15	1,615,950.
315	Fairhaven	P.S., F.M., Int., Sewers	4,153,000.	15	622,950.
342	Wilmington	P.S., F.M., Sewers	5,695,160.	15	854,274.
333-2	Amherst	Interceptor	880,890.	15	132,134.
279-2	Palmer	T., Int., P.S., F.M., Sewers	15,857,883.	15	2,378,683.
324	Lancaster	Int., P.S., F.M., Sewers	2,182,635.	15	327,395.
531	Auburn	P.S., F.M., Sewers	5,545,935.	15	831,890.
298	South Hadley	T., P.S., F.M.	8,711,299.	15	1,306,695.
533	Cambridge	Separation	498,328.	15	74,749.
424	Barnstable	T., Int., P.S., Sewers	15,350,820.	15	2,302,623.
19-2	Huntington	T., Sewers	980,533.	15	147,080.
16-2	Randolph	Int., Coll., Sewers, P.S.	4,889,074.	15	733,361.

NO.	MUNICIPALITY	PROJECT	EST. TOTAL COSTS	%	STATE GRANT
295-2	Attleboro	T., P.S., F.M., Sewers	30,726,456.	15	4,608,968.
377	Webster	P.S., F.M., Sewers	3,120,791.	15	468,119.
570	Webster	Sewers, P.S.,	1,153,955.	15	173,093.
75-1	Holyoke	WWTP. Int. P.S.	23,778,800	90	21,400,920
			210,976,218		49,480,528

DIVISION OF WATER POLLUTION CONTROL
WASTEWATER TREATMENT FACILITIES CONSTRUCTION PROGRAM
STATE GRANT PROGRAM
SUMMARY OF GRANTS AS OF JULY 1, 1977

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
169	Adams	1969	T-P-INT-FM	4	$3,466,912	25%	$866,728
73-1	Agawam	1973	P-INT	4	704,318	90%	633,886
220	Agawam	1971	P	4	37,732	25%	9,433
282	Agawam	1975	P-FM	3	1,245,700	15%	186,855
374	Agawam	1977	P-FM-INT	1	1,611,400	15%	241,710
244	Amesbury	1971	T-P-INT-FM-OUT	3	2,699,300	35%	944,755
452	Amesbury	1977	P-FM-INT	2	2,163,600	15%	324,540
73-2	Amherst	1973	P-FM	4	614,780	90%	553,302
272	Amherst	1975	T-P-OUT	2	13,512,125	15%	2,026,818
333	Amherst	1977	INT	2	880,890	15%	132,133
193	Athol	1970	T-P-INT-FM-OUT	4	1,232,965	25%	308,241
295	Attleboro	1977	T-P-INT	1	29,390,548	15%	4,408,582
211	Auburn	1971	P-INT-FM	4	2,048,400	25%	512,100
531	Auburn	1977	INT-P-FM	1	5,545,935	15%	831,890
380	Auburn	1977	P-FM-INT	2	6,674,000	15%	1,001,100
195	Ayer	1969	T	4	59,872	25%	14,968
178	Barnstable	1968	T	4	256,277	25%	64,069
424	Barnstable	1977	T	1	15,350,820	15%	2,302,623
207	Bedford	1971	P-INT-FM	3	1,138,000	25%	284,500

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
171	Billerica	1968	P-INT-FM	4	458,975	25%	114,743
248	Billerica	1973	T	3	1,600,000	35%	560,000
388	Billerica	1977	P-LS	2	8,060,139	15%	1,209,021
159	Braintree	1969	INT	4	108,772	27%	29,368
156	Brockton	1968	INT	4	448,128	30%	134,438
230	Buckland	1972	T-INT-OUT	3	690,500	35%	241,675
350	Cambridge	1977	SEP	2	767,784	15%	115,167
351	Cambridge	1977	SEP	2	4,150,370	15%	622,555
533	Cambridge	1977	SEP	1	498,328	15%	74,749
297	Charles River P.C.D.	1976	T-P-INT	2	25,124,870	15%	3,768,730
200	Chatham	1970	T-P-INT-FM	4	1,551,681	25%	387,920
104	Chicopee	1968	T-P-INT-OUT	4	4,066,567	30%	1,219,970
239	Chicopee	1972	P-INT-FM	3	682,800	35%	238,980
74-5	Chicopee	1974	T-P-INT	2	14,412,000	90%	12,564,150
170	Cohasset	1968	T-P-INT	4	508,090	25%	127,022
166	Concord	1970	T	4	61,928	25%	15,482
165	Dartmouth	1968	T-P-INT	4	4,487,574	25%	1,121,894
197	Deerfield	1970	T-INT	4	1,443,274	25%	360,819

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
245	Douglas	1973	T-INT	3	938,500	35%	328,475
185	Dudley	1969	T-P-INT-FM	3	1,070,000	25%	267,500
174	Easthampton	1968	T-P-INT-FM	4	4,422,000	25%	1,105,500
155	East Longmeadow	1969	INT	4	243,468	30%	73,040
205	East Longmeadow	1971	P-INT-FM	4	162,306	25%	40,576
228	Edgartown	1972	T-P-INT	4	1,295,357	35%	453,375
262	Erving (Millers Falls)	1973	T-P-INT	3	2,080,000	15%	312,000
301	Erving (Erving Village)	1975	T-P	2	4,558,457	25%	683,769
186	Fairhaven	1969	T-P-INT	4	5,491,748	25%	1,372,937
315	Fairhaven	1977	PS-FM-INT-LS	1	4,153,000	15%	622,950
184	Fall River	1969	T	3	2,170,000	25%	542,500
224	Fall River	1971	P-INT-FM	4	212,020	25%	53,005
257	Fitchburg (East)	1973	INT	3	1,438,000	15%	215,700
234	Fitchburg (West)	1972	T	3	11,989,000	35%	4,196,150
227	Fitchburg (East)	1973	T	3	13,484,000	15%	2,022,600

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
213	Framingham	1971	P-INT-FM-RS	4	3,103,000	25%	775,750
223	Gardner	1971	T-INT	4	2,056,329	25%	514,082
271	Grafton	1977	T-P-INT-FM	2	12,884,972	15%	1,932,745
236	Great Barrington	1972	T-P-INT-FM	3	4,650,000	35%	1,627,500
273	Greater Lawrence - Phase II	1975	INT	3	7,500,000	15%	1,125,000
252	Greater Lawrence - Phase I	1974	T-P-INT	3	45,216,000	15%	6,782,400
152	Greenfield	1969	T-P-INT	4	525,452	30%	157,635
238	Greenfield	1972	T	4	3,050,000	35%	1,067,500
286	Groveland	1976	P-INT-LS-FM	2	1,602,800	15%	240,420
240	Hardwick	1972	T-P-INT-OUT	4	1,368,882	35%	479,109
318	Hardwick	1977	T-P-LS	1	739,096	15%	110,864
266	Haverhill - Phase I	1974	T-P-INT-FM-OUT	3	20,196,000	15%	3,029,400
274	Haverhill - Phase II	1975	INT	3	8,750,000	15%	1,312,500
339	Haverhill	1977	INT	1	552,244	15%	82,836
158	Hingham	1969	P-INT-FM	4	97,154	27%	26,231
278	Hinsdale	1975	INT	2	612,950	15%	91,942

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
275	Holbrook	1975	INT	2	2,540,000	15%	381,000
173	Holyoke	1968	P-INT-FM	4	313,039	25%	78,260
74-6	Holyoke	1974	P-INT	3	1,490,000	90%	1,341,000
75-1	Holyoke	1977	T-INT-PS-FM	1	23,778,800	90%	21,400,920
237	Hoosac Water Quality District	1973	INT	4	691,902	35%	242,166
74-4	Hoosac Water Quality District	1974	T-INT	3	7,248,000	90%	6,523,200
215	Hudson	1971	P-INT-FM	4	777,928	25%	194,482
300	Hull	1976	T-P-INT-FM-OUT	2	13,000,000	15%	1,798,650
319	Huntington	1977	T-INT	1	902,830	15%	135,424
160	Ipswich	1968	INT	4	64,697	30%	19,409
256	Ipswich	1974	T-P	3	4,400,000	15%	660,000
324	Lancaster	1977	INT-P-FM	1	2,182,635	15%	327,395
148	Lee	1969	T	4	873,150	30%	261,945
355	Lee	1977	INT	1	135,340	15%	20,301
111	Leicester W.D.	1968	T	4	234,508	30%	70,352
188	Lenox	1969	T-INT	4	1,013,075	25%	253,269
214	Leominster	1971	T	3	136,900	25%	34,225

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
74-2	Lexington	1974	INT	4	40,595	90%	36,536
217	Lexington	1971	P-INT	3	597,000	25%	149,250
142	Lexington	1969	FM-INT	4	268,762	27%	72,566
281	Longmeadow	1975	P	3	1,457,585	15%	218,638
284	Lowell - Phase I	1975	T-INT	2	49,489,000	15%	7,423,350
251	Lowell (Site)	1973	Site Prep	4	1,340,000	35%	469,000
259	Ludlow	1973	INT	3	775,000	15%	116,250
366	Ludlow	1977	INT-LS	1	2,582,400	15%	387,360
198	Manchester	1970	T	4	604,702	25%	151,176
154	Mansfield	1968	T	4	542,500	30%	162,750
202	Marion	1970	T-P-INT	4	1,069,434	25%	267,359
182	Marlborough	1969	T-INT	4	2,015,799	25%	503,950
221	Marlborough	1971	T-INT	4	8,518,061	25%	2,129,515
384	Marlborough	1976	INT	2	864,800	15%	129,720
311-2	Mattapoisett	1977	PS-INT-FM	1	2,323,884	15%	348,582
247	Maynard	1973	T	3	2,117,143	35%	741,000

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
249	Medfield	1973	T-INT	3	3,461,000	35%	1,211,350
410	Medfield	1977	INT-LS	1	4,644,204	15%	696,630
411	Medway	1977	LS	2	2,007,155	15%	301,073
68-1	MDC - Deer Island Adm.	1968	T	4	577,829	60%	346,697
177	MDC - Mill Brook	1968	INT	4	763,411	25%	190,830
161	MDC - Winthrop Term.	1969	T-P	4	2,588,700	27%	698,449
181	MDC - N Charles	1969	INT	4	1,322,116	25%	330,529
226	MDC - N Charles	1971	RS-INT	2	16,000,000	25%	4,000,000
312	MDC - Charles River	1975	Marginal Conduit	2	25,200,000	15%	3,780,000
196	MDC - Malden	1970	RS-INT	3	1,900,000	25%	475,000
192	MDC - Squantum	1969	INT	4	2,480,000	25%	620,000
305	Middleborough	1975	T	2	5,720,000	15%	858,000
172	Millbury	1968	T-INT	4	2,183,215	25%	545,804
206	Monroe	1971	T-INT-OUT	4	127,475	25%	31,869
332-2	Monson	1977	P-INT-LS	1	8,829,211	15%	1,324,381
276	Montague (Millers Falls)	1975	MS-INT	3	110,010	15%	16,501
199	New Bedford	1970	T-P-OUT	3	7,263,600	25%	1,815,900

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
391	Newburyport	1977	PS-INT-FM	2	4,117,261	15%	617,589
225	Northbridge	1971	T-P-INT-FM	4	1,653,312	25%	413,328
208	North Brookfield	1971	T	4	399,209	25%	99,802
203	Northfield	1970	T-INT	4	536,290	25%	134,072
270	Orange	1974	T-INT	3	3,023,700	15%	453,555
246	Oxford Rochdale S.D.	1973	T-INT-OUT	4	772,564	35%	270,397
379	Oxford Rochdale S.D.	1977	INT	1	1,357,186	15%	203,577
279	Palmer	1977	T-INT-PS-FM	1	15,857,883	15%	2,378,682
397	Peabody	1977	PS-INT-FM	2	3,915,357	15%	587,303
277	Peabody	1975	P-INT	2	3,654,460	15%	548,169
287	Pepperell	1976	P-INT	1	3,518,110	15%	527,716
175	Pittsfield	1968	INT	4	640,268	25%	160,067
157	Pittsfield	1968	P-INT	4	115,850	30%	34,755
74-3	Pittsfield	1974	T-P	2	11,976,010	90%	10,778,409
162	Plymouth	1968	T-P-INT-OUT	4	3,077,000	25%	769,250
416	Randolph	1977	INT-LS-P	1	4,572,142	15%	685,821
303	Raynham	1975	P-INT	3	996,500	15%	149,475
163	Reading	1968	INT	4	839,277	27%	226,605
401	Reading	1977	P-INT-FM	2	1,650,245	15%	247,536

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
255	Rockport	1974	T-P-INT-FM-OUT	3	3,429,000	15%	514,350
394	Rockport	1977	INT-P-FM	1	1,862,900	15%	279,435
229	Royalston	1972	T-P-INT	3	241,000	35%	84,350
399	Salem	1977	INT	2	4,138,696	15%	620,804
69-1	Scituate	1969	INT	4	13,127	60%	7,876
231	Shelburne	1972	P-INT-FM	3	193,100	35%	67,585
74-1	Shrewsbury	1974	T	4	163,000	90%	146,700
164	Somerset	1969	T-PS-INT-FM-OUT	4	4,865,900	25%	1,216,475
425	Somerset	1977	P-FM-LS	2	4,903,442	15%	735,516
179	Southbridge	1971	T-P-INT	4	1,934,303	25%	480,898
222R	South Essex S.D.	1972	P-INT	3	11,710,000	25%	2,927,500
241	South Essex S.D.	1973	T-P-FM-OUT	2	26,500,000	27.7%	7,366,708
288	South Essex S.D. (Marblehead)	1976	INT	2	7,000,000	15%	1,050,000
298	South Hadley	1977	T-INT-P-FM	1	8,323,235	15%	1,248,485
194	Spencer	1969	T-INT	4	1,286,402	25%	321,601
258	Springfield	1973	T-P-INT	2	52,550,000	15%	7,882,500
189	Sturbridge	1969	T-P-INT	4	1,138,649	25%	284,662
250	Sunderland	1973	T-P-INT-FM	3	1,475,000	35%	516,250

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
290	Sutton	1977	P-INT-LS	1	1,369,270	15%	205,390
210	Swampscott	1971	T-P	3	3,248,000	25%	812,000
168	Taunton	1968	P-INT	4	1,558,004	25%	389,501
302	Taunton	1975	T-INT	2	15,765,380	15%	2,364,807
306	Templeton	1976	T-P-INT	2	5,723,065	15%	858,460
212	Upper Blackstone W.P.A.D.	1971	FM-INT	4	66,526	25%	16,632
253	Upper Blackstone W.P.A.D.	1973	T	2	24,000,000	15%	3,600,000
204	Upton	1970	T-INT	4	1,069,592	25%	267,398
383	Upton	1977	P-INT	1	1,412,344	15%	211,851
541	Upton	1977	LS	1	467,323	15%	70,098
289	Uxbridge	1977	T-INT-P-LS	1	10,773,000	15%	1,615,950
190	Wakefield	1969	P	4	485,621	25%	121,405
201	Wareham	1970	T-P-INT-FM	4	3,459,000	25%	864,750
242	Webster	1973	T-P	3	4,410,000	15%	661,500
377	Webster	1977	P-INT-LS	1	3,120,791	15%	468,118
570	Webster	1977	P-LS	1	1,153,955	15%	173,093
269	Wellesley	1975	P	3	979,000	15%	146,850
183	Westborough	1969	T-INT	4	1,532,372	25%	383,093

WPC NO.	NAME OF APPLICANT	FISCAL YEAR	PROJECT	STATUS	TOTAL ELIGIBLE COST	STATE GRANT PERCENTAGE	STATE GRANT AMOUNT
218	Westfield	1971	T-INT	4	4,576,000	25%	1,144,000
209	West Springfield	1971	FM-P-INT	4	760,665	25%	190,166
233	West Springfield	1972	P-INT	3	5,800,000	35%	2,030,000
216	Wilbraham	1971	T-P-INT-FM	4	3,344,000	25%	836,000
187	Williamstown	1970	P-INT	4	365,946	25%	91,486
219	Wilmington	1971	INT	4	277,000	25%	69,250
342	Wilmington	1977	INT-LS-P	1	5,695,160	15%	854,274
254	Winchendon	1973	T	3	1,780,000	35%	623,000
153	Woburn	1969	INT	4	159,286	30%	47,786
				TOTAL:	$836,270,680.00		$197,835,110.00

Project Nomenclature

T - Treatment Plant
P - Pumping Station
INT - Interceptor
FM - Force Main
OUT - Outfall Sewer
RS - Relief Sewer
LS - Lateral Sewers
SEP - Separation

Status

1 - Grant Made
2 - Under Construction
3 - Work Completed
4 - Project Completed

/rew

CONSTRUCTION GRANTS PROGRAM

BOND FUND

PAYMENTS TO CITIES, TOWNS, AND DISTRICTS

FISCAL YEAR ENDED JUNE 30, 1977

WPC NO.	CITY, TOWN, OR DISTRICT	PAYMENTS FISCAL YEAR 1977	DATE	FY TOTAL
282	Agawam	$ 26,071.00	8-30-76	$ 26,071.00
295	Attleboro	170,131.00	1-25-77	
		36,500.00	4-7-77	206,631.00
380	Auburn	467,180.00	6-16-77	467,180.00
211	Auburn	117,185.00	3-23-77	117,185.00
388	Billerica	483,608.00	5-26-77	483,608.00
297	Charles River P.C.D.	753,746.00	10-15-76	
		690,326.00	3-14-77	
		618,888.00	5-9-77	2,062,960.00
74-5	Chicopee	970,903.52	12-6-76	
		849,540.58	12-9-76	1,820,444.10
423	Dartmouth	18,093.00	6-28-77	18,093.00
245	Douglas	46,925.00	9-23-76	46,925.00
174	Easthampton	313,492.00	7-16-76	313,492.00
184	Fall River	65,100.00	6-28-77	65,100.00
213	Framingham	240,446.00	5-10-77	240,446.00
271	Grafton	554,156.00	6-8-77	554,156.00
236	Great Barrington	127,875.00	6-13-77	127,875.
238	Greenfield	92,871.00	3-23-77	92,871.00

WPC NO.	CITY, TOWN, OR DISTRICT	PAYMENTS FISCAL YEAR 1977	DATE	FY TOTAL
286	Groveland	163,640.00	5-26-77	
		163,641.00	6-28-77	327,281.00
275	Holbrook	254,000.00	8-30-76	254,000.00
75-1	Holyoke	164,161.18	11-16-76	164,161.18
74-4	Hoosac W.Q.D.	693,600.00	12-8-76	
		724,800.00	12-20-76	1,418,400.00
300	Hull	453,430.00	6-28-77	453,430.00
319	Huntington	11,650.00	2-23-77	11,650.00
358	Lenox	9,337.00	5-26-77	9,337.00
251	Lowell	427,602.00	8-16-76	427,602.00
284	Lowell	494,890.00	7-20-76	
		494,890.00	8-6-76	
		494,890.00	9-10-76	1,484,670.00
293	Lowell	104,563.00	5-26-77	104,563.00
154	Mansfield	47,366.36	3-8-77	47,366.36
384	Marlborough	70,730.00	4-7-77	70,730.00
470	Marshfield	58,000.00	7-20-77	58,000.00
249	Medfield	173,050.00	6-14-77	173,050.00
503	Melrose	6,625.00	6-22-77	6,625.00
312	M.D.C.-Charles River	911,740.00	4-21-77	
		683,805.00	5-5-77	
		683,805.00	5-31-77	2,279,350.00

WPC NO.	CITY, TOWN, OR DISTRICT	PAYMENTS FISCAL YEAR 1977	DATE	FY TOTAL
332	Monson	42,000.00	4-14-77	42,000.00
276	Montague	11,001.00	10-26-76	11,001.00
321	Montague	850.000	4-19-77	
		1,700.00	6-8-77	2,550.00
307	Newburyport	8,000.00	12-23-76	
		8,500.00	5-26-77	
		17,000.00	5-26-77	
		8,500.00	6-16-77	42,000.00
391	Newburyport	145,500.00	5-9-77	145,500.00
280	North Attleboro	32,662.50	2-3-77	
		16,331.25	2-28-77	
		16,331.25	3-8-77	
		16,331.25	4-14-77	81,656.25
279	Palmer	634,315.00	5-11-77	634,315.00
74-3	Pittsfield	998,500.00	12-13-76	
		883,500.00	12-20-76	
		868,000.00	6-28-77	
		868,000.00	6-30-77	3,618,000.00
416	Randolph	13,842.60	1-13-77	
		22,450.00	5-31-77	36,292.60
399	Salem	289,709.00	4-19-77	289,709.00
74-1	Shrewsbury	44,394.00	5-19-77	44,394.00
425	Somerset	171,620.00	6-14-77	171,620.00
241	South Essex S.D.	619,394.00	9-10-76	
		530,000.00	9-30-76	1,149,394.00

WPC NO.	CITY, TOWN, OR DISTRICT	PAYMENTS FISCAL YEAR 1977	DATE	FY TOTAL
288	South Essex S.D.	490,000.00	3-11-77	490,000.00
298	South Hadley	86,581.00	3-14-77	86,581.00
210	Swampscott	162,400.00	6-14-77	162,400.00
306	Templeton	171,691.95	11-18-76	
		210,710.00	6-22-77	382,401.95
289	Uxbridge	47,400.00	12-23-76	47,400.00
201	Wareham	206,915.27	11-8-76	206,915.27
218	Westfield	294,082.00	7-26-76	294,082.00
413	Westwood	21,792.50	2-28-77	
		21,792.50	4-7-77	43,585.00
216	Wilbraham	229,053.00	4-14-77	229,053.00
219	Wilmington	17,843.00	1-26-77	17,843.00
254	Winchendon	89,000.00	6-16-77	89,000.00
			Fiscal Year Total:	$ 22,250,945.71

DIVISION OF WATER POLLUTION CONTROL
MASSACHUSETTS CLEAN WATERS ACT
G.L. CHAPTER 21 - SEC. 37 - REIMBURSEMENT

FISCAL YEAR 1977	PROJECT NO.	REIMBURSEMENT
Amherst	28	4,500.
Ashland	37	2,452.
Ayer	58	1,500.
Bedford	102	1,298.
Billerica	98	10,822.
Braintree	100 & 136	4,443.
Brockton	150,85,85,116,116,17B,& R-1	54,978.
Burlington	141	10,734.
Concord	81	6,922.
Dudley	62	148.
Easthampton	1	3,000.
Fall River	74	7,500.
Holyoke	27	3,852.
Hudson	61	5,724.
Ipswich	14	3,270.
Leominster	114	1,977.
Longmeadow	29	3,078.
Ludlow	56	983.
Milford	134	
Newburyport	88	2,421.
Pittsfield	31,43,71,R-2,99,129,130	104,732.
Randolph	R-3 & 132	18,883.
Scituate	144	6,818.
Springfield	50,57,64,72	3,338.
Sunderland	118	278.
Taunton	123	1,289.
Ware	96	1,000.
Warren	90	1,381.
West Springfield	54	10,725.
Weymouth	49 & 121	3,468.
Woburn	38	516.
Worcester	47 & 138	4,087.
M.D.C.		244,200.

Total July 1, 197 - Dec. 31, 1977 $ 534,937.

DIVISION OF WATER POLLUTION CONTROL
MASSACHUSETTS CLEAN WATERS ACT
G.L. CHAPTER 21 - SEC. 37 - REIMBURSEMENT

Jan. 1, 1977 - June 30, 1977

FISCAL YEAR 1977	PROJECT NO.		REIMBURSEMENT
Attleboro	55		$ 2,524.
Ayer	58		3,000.
Dalton	44		10,500.
Hadley	92		549.
Lenox	67		2,231.
Leominster	89	8,866.	12,173.
Lexington	91	3,307.	12,173.
Longmeadow	4		6,000.
Marlborough	84		2,981.
Middleborough	66		369.
Montague	76	7,941.	
	108	1,789.	9,730.
North Adams	69		1,584.
Randolph	32	7,500.	
	32	14,991.	22,491.
Rockland	106	9,000.	
	106	8,029.	17,029.
Scituate	144		11,394.
Shrewsbury	13	5,941.	
	82	4,870.	
	117	196.	11,007.
Springfield	46	1,978.	
	131	465.	2,443.
Webster	105		2,975.
Westwood	51	1,833.	
	75	2,748.	4,581.
Williamstown	26		7,500.
M.D.C.	135		429,600.
		TOTAL	$ 565,745.

MANDATORY CERTIFICATION OF TREATMENT PLANT OPERATORS

Massachusetts had conducted a voluntary certification program in conjunction with the New England Water Pollution Control Association for a number of years.

On August 26, 1970 Governor Sargent signed into law an Act establishing a Board of Certification of Operators of Wastewater Treatment Facilities. This Act requires the following:

1. That a nine(9) member Board of Certification of Operators be established to insure the proper management, operation and maintenance of wastewater systems.

2. That a fee of ten(10) dollars be required for the original certificate of competency and a annual fee of five(5) dollars for renewal thereafter.

3. That no person, corporation, city, town or district shall operate a treatment facility used for treating, neutralize or stabilizing wastewater from homes, public buildings, commercial and industrial establishments unless the person in charge of the treatment facility has a certificate of competency issued by the Board of Certification of Wastewater Treatment Plant Operators. Violation of the mandatory certification is punishable by a fine of not more than twenty(20) dollars for each day that such violations occur.

4. That any individual who files an application for a certificate of competency prior to July 1, 1972 and extended by the General Court during the legislative year of 1973 to July 1, 1974 and provided further that he was employed as an operator at a treatment facility in Massachusetts on July, 1971 would be eligible for certification under the Grandfather's Clause. All others seeking certification shall pass an examination prepared by the Board of Certification of Wastewater Treatment Plant Operators or shall be granted certification by means of a reciprocity agreement amongst the various states prepared by the above mentioned Board of Certification.

5. The Board through its Rules and Regulations have set the following policies. "The Chief Operator is in responsible charge during all working hours of the plant in plants which have an eight(8) hour a day, seven(7) days a week operation" and "during the absence of the operator in charge, the plant must have a certified operator with a rating not less than one grade below the rating of the plant. This applies to plants having a rating of Grades 1-4; for Grade 5, 6, and 7 plants, the operator in charge of the plant at any time must have a rating equal to that of the plant or a rating commensurate with the duties he is performing as designated by the Board of Certification.

The Board of Certification has established a set of Rules and Regulations plus application forms for the certification program. The Honorable Governor of the Commonwealth has appointed the members to serve on the Board of Certification of Wastewater Treatment Plant Operators. The Board holds regularly scheduled monthly meetings to complete business properly before the body and to establish policy as necessary. The Board has certified, either under the Grandfather's Clause, reciprocal agreement or examination one thousand four hundred and twenty six (1426) individuals at the present time.

PERMITS AND ENFORCEMENT

The Federal Water Pollution Control Act Amendments of 1972 enacted by Congress on October 18, 1972, established a national discharge permit program to control all point discharges into the Nation's waters. The Act provides that the permit program, or National Pollutant Discharge Elimination System (NPDES), be administered by the U.S. Environmental Protection Agency unless E.P.A. has approved the administration of the program by the State.

In recognition of the fact that many States would be required to enact new or modify existing State legislation in order to qualify for approval of their permit programs, Congress authorized the E.P.A. to grant "interim authority" for NPDES permit issuance until March 18, 1973, to States whose existing programs were adequate to issue such permits. The Division applied for interim authority on December 5, 1972, and received approval from the Administrator of the E.P.A. on January 10, 1973. Under this interim authority the Enforcement and Industrial Wastes Sections processed and issued 13 permits for discharges of oil-contaminated storm water requiring treatment for removal of the oil.

During the same period, legislation was filed in the General Court to amend the Massachusetts Clean Waters Act to comply in all respects with the requirements for final E.P.A. approval of the Commonwealth's permit program. On July 27, 1973, Governor Sargent signed into law Chapter 546 of the Acts of 1973 which amended M.G.L. c. 21 to provide the Division with the authority necessary to administer the NPDES permit program in Massachusetts. However, lack of manpower and resources has prevented the Division from applying to E.P.A. for approval of the Commonwealth's take-over of the NPDES permit program.

While the Division's "interim" permitting authority from the E.P.A. expired by operation of law on March 18, 1973, in order to avoid confusion for the industries and municipalities applying for permits and in order to provide for the administration of a consistent and co-ordinated permit program in the Commonwealth, the Division and Region I of the E.P.A. on that date entered into an agreement for the issuance of joint permits under authority of their respective statutes. Issuance of joint permits is being co-ordinated through a Technical Committee comprised of Division and E.P.A. personnel. It is anticipated that the agreement will remain in effect until the Commonwealth's permit program receives final E.P.A. approval. To date, over 700 joint permits have been issued by the Division and E.P.A., including permits for all the major industrial and municipal discharges in the Commonwealth. The status of the permit program through Fiscal 1977 is shown in the following table.

Status of the "NPDES" Permit Program as of June 30, 1977

Municipal Permit Program	Issued	
A. Permit Applications Submitted	234	83
B. Permits Drafted	190	58
C. Permits sent to Public Notice	175	51
D. Permits for which Public Hearings were held	4	0
E. Permits Issued	161	10

Industrial Permit Program		
A. Permit Applications Submitted	1,011	38
B. Permits Drafted	600	15
C. Permits sent to Public Notice	573	13
D. Permits for which Public Hearings were held	25	0
E. Permits Issued	542	7

Cases Referred to Attorney General	
A. Municipal	20
B. Industrial	61

Section 301(b) of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) requires that, by July 1, 1977, all point sources of polluted discharges, other than from publicly-owned treatment works, achieve effluent limits based on the application of the best practicable control technology currently available. Publicly-owned treatment works are required to have secondary treatment by that date. Where, despite all reasonable efforts by or on behalf of the applicant, achievement of final effluent limits by July 1, 1977 was impossible or impracticable, the E.P.A., in the exercise of its prosecutorial discretion, proposes to issue to the applicant, at the same time as issuance or re-issuance of the permit, an Enforcement Compliance Schedule Letter (ECSL) setting forth the terms and conditions which must be satisfied by the permittee in order to avoid enforcement action by the E.P.A. for the permittee's failure to have achieved final effluent limitations by July 1, 1977. The Division is of the opinion that the July 1, 1977 deadline for achievement of final limitations may appropriately be extended beyond that date for the purposes of the Massachusetts Clean Waters Act only by the courts of the Commonwealth. For this reason, the Division does not participate in the issuance of the ECSL. However, the Division reviews and usually concurs in the schedule contained in the ECSL.

As indicated in the previous table, the Division is embarked on a joint program with E.P.A. for the reissuance of those permits which expired June 30, 1977, that is, those permits which did meet the statutory effluent limits by that date.

In addition to expending the statutory provisions of the Massachusetts Clean Waters Act applicable to discharge permit program, the amendments to Chapter 21 also modified and strengthened the tools available to the Division to prosecute violations of the Act. The principle enforcement provisions are contained in Sections 27(14), 28, 29, 42, and 44 of Chapter 21. As the Division nears completion of the first round of the permit-issuing process, program emphasis will shift to monitoring compliance of the permittees with the terms and conditions of their permits and active enforcement for violations of those permit conditions. As long as the joint permit system remains in effect, enforcement activities of the Division will be closely coordinated with those of the E.P.A. to provide the most effective possible program.

WATER QUALITY AND RESEARCH SECTION

ANNUAL REPORT
FISCAL YEAR 1977

The Water Quality and Research Section has taken an active role in the "208" Areawide Wastewater Management Studies over the past year. This involvement included collection and analysis of water quality data including special studies aimed at improving the data base for mathematical modeling, obtaining receiving water data for point sources, and the expansion of the data base for non-point source evaluation. The Section was particularly involved in developing, calibrating and utilizing mathematical simulation models for calculating waste load allocations and evaluating various abatement alternatives for both the "designated" and "non-designated" 208 areas. Aid was given in the development and review of designation information, preliminary work plans and initial data outputs. Future involvement will include aid in developing and reviewing the final management plans.

The Water Quality Standards Revisions including the anti-degradation policies have been drafted by the Section. The standards along with new classifications and segmentation will be incorporated into Phase II Water Quality Management Plans. Phase II Basin Plans are scheduled for completion by April, 1978 with final submittal by November of that year. These reports will be an updated version of the Phase I plans and will include a definition of those programs necessary to achieve the revised water quality standards and fishable-swimmable water quality.

The Section is continuing to give the highest priority to water quality monitoring. In fiscal 1977 intensive water quality surveys were conducted on the following basins:

South Coastal Basin (76)
Cape Cod Basin (76)
North Coastal Basin (76)
French River Basin (76)
Quinebaug River Basin (76)
Blackstone River Basin (77)
Nashua River Basin (77)

Each of the above surveys with the exception of Cape Cod include compliance monitoring. All major treated discharges in the basins were sampled at least 3 consecutive days. Treated minor discharges were also sampled where feasible. In addition to the above surveys, wet weather and water quality sampling was done in the Northern Middlesex Area for the Northern Middlesex Area Commission 208 study and the Housatonic River for the Berkshire County Planning Commission 208 Study.

The Water Quality Survey Schedule for fiscal 1978 will be:

Blcakstone River Basin (77)
Nashua River Basin (77)
Deerfield River Basin (77)

Hoosic River Basin (77)
Housatonic River Basin (77)(78)
Connecticut River Basin (78)
Millers River Basin (78)

PHASE I
BASIN PLANNING SUMMARY
(As required by PL 92-500 Section 303e)

		HEARING	SUBMITTED	APPROVED
1	Blackstone	8/20/75	11/26/75	1/28/76
2	Boston Harbor	Waived	7/23/76	9/13/76
3	Buzzards Bay	4/21/77	6/17/77	6/30/77
4	Cape Cod	3/18/76	5/22/76	6/30/76
5	Charles	4/8/76	3/11/76	8/25/76
6	Chicopee	1/20/76	3/11/76	5/19/76
7	Connecticut	10/29/75	1/22/76	3/11/76
8	Deerfield	6/12/75	8/20/75	10/10/75
9	Farmington	8/26/75	3/23/76	8/11/76
10	French & Quinebaug	12/2/75	1/26/76	3/24/76
11	Hoosic	6/10/75	9/18/75	10/20/75
12	Housatonic	1/26/76	3/18/76	4/26/76
13	Ipswich & Parker	3/1/77	5/18/77	6/28/77
14	Islands	2/1/76	8/19/76	10/14/76
15	Merrimack & Shawsheen	7/16/75	12/9/75	2/5/76
16	Millers	5/14/75	6/23/75	2/5/76
17	Nashua	5/22/75	9/11/75	11/26/76
18	North	6/4/75	7/10/75	9/3/75
19	North Shore Coastal	10/15/75	12/19/75	5/18/76
20	South Shore Coastal	8/13/75	10/10/75	11/26/75
21	Sudbury, Assabet & Concord	5/6/76	7/22/76	10/14/76
22	Taunton	7/10/73	8/15/73	12/20/74
23	Ten Mile	1/22/76	4/6/76	6/7/76
24	Westfield	12/4/75	3/23/76	7/7/76

Major revisions to the Division's "Stream 7" mathematical simulation model have been made over the past year by both Division personnel and personnel of Resource Analysis, Inc. The "harbor" water quality computer program also saw significant changes over the past year. Both models will be used extensively over the next year as they will play an intricate role in Phase II basin planning.

LAKES PROGRAM

Since 1974 the Massachusetts Division of Water Pollution Control has been diligently pursuing its Lakes Program. This past year saw the initiation of the first state-federaltown sponsored lake restoration projects under Section 314 of the 1972 Amendments to the Federal Water Pollution Control Act (Public Law 92-500).

The overall objectives of the Lakes Program continue to include the following:

1. To gather baseline data and compile an inventory of Massachusetts freshwater lakes and ponds;

2. To develop and maintain a lake classification scheme aimed towards a comprehensive lake restorative, and in some cases, a lake preservative program. This involves compliance with Section 314 of PL 92-500;

3. To develop a basis for evaluating the impact of shoreline development on Massachusetts' Lakes. The goal would be the development of watershed management plans to improve or maintain lake water quality;

4. To develop and continually evaluate lake water quality sampling and methodology; and

5. To satisfy the increased public demand for attention to lake problems.

The basic strategy of the Massachusetts Lakes Program involves investigation at two levels. One approach is the "baseline survey" which is generally completed in one day. This survey consists of bathymetric mapping of the lake; chemical and biological sampling of the open water areas, tributary streams, and the outlet; and a qualitative mapping of the aquatic macrophyton community in the lake.

The second approach of lake investigation is the "intensive survey". This is a more comprehensive level of study involving six months sampling of a lake for a period of one year. The sampling periods are post vernal circulation, June, July, August, post autumnal circulation, and under ice-cover during the winter. This type of lake survey is a far more comprehensive investigation and involves the collection of several physical, chemical, and biological data.

Data from both types of lake surveys are published and made available to interested agencies and the general public. To date, the following lake studies have been published under these titled:

1974

Lake Quinsigamond 1971 Water Quality Study. 78 pp.

1975

Baseline Water Quality Studies of Selected Lakes and Ponds - Housatonic River Basin 1974. 131 pp.

Upper Mystic Lake 1974-1975 Water Quality Study. 75 pp.

1976

Quaboag and Quacumquasit Ponds 1974-1975 Water Quality Study. 71 pp.

Lake Pearl 1974-1975 Water Quality Study. 61 pp.

Nutting Lake 1974-1975 Water Quality Study. 68 pp.

Baseline Water Quality Studies of Selected Lakes and Ponds - Assabet River Basin 1974. 64 pp.

Baseline Water Quality Studies of Selected Lakes and Ponds - Housatonic River Basin 1976. 91 pp.

Baseline Water Quality Studies of Selected Lakes and Ponds - French and Quinebaug River Basins 1976. 144 pp.

Compilation of Lakes, Ponds, and Reservoirs Relative to the Massachusetts Lake Classification Program. 127 pp.

Massachusetts Lake Classification Program 1976. 11 pp.

Massachusetts Lakes Program. 6 pp.

Lake Monomonac 1976 Study. 26 pp. (Issued jointly by the Massachusetts Division of Water Pollution Control and the New Hampshire Water Supply and Pollution Control Commission).

1977

South Watuppa Pond 1974-1975 Water Quality Study. 69 pp.

The Section 314 lake restoration projects currently underway in Massachusetts mark a new and innovative approach to lake rehabilitation and provides new hope for eutrophic lakes in the Commonwealth. Data collected during an intensive survey has in many cases been the accepted basis for 314 projects. Although the list is not long, it is hoped the 314 program will continue on an expanded scale in the future.

Section 314 Research and Demonstration Projects currently underway in Massachusetts include:

LAKE/POND	LOCATION	DRAINAGE
Charles Basin	Boston/Cambridge	Charles
Ellis Brett Pond	Brockton	Taunton
Lake Cochituate	Framingham/Natick/Wayland	Sudbury
Morses Pond	Wellesley/Natick	Charles
Nutting Lake	Billerica	Concord

The following waterbodies were sampled during Fiscal Year 1977:

Baddacook Pond	Groton	Nashua
Chaffin Pond	Holden	Nashua
Coes Reservoir	Worcester	Blackstone
Crystal Lake	Douglas	Blackstone
Dorothy Pond	Millbury	Blackstone
East Waushacum Pond	Sterling	Nashua
Eddy Pond	Auburn	Blackstone
Flint Pond	Tyngsborough	Merrimack
Fort Pond	Lancaster	Nashua
Knops Pond	Groton	Nashua
Lake Attitash	Amesbury/Merrimac	Merrimack
Lake Cochituate	Framingham/Natick/Wayland	Sudbury
Lake Shirley	Lunenburg/Shirley	Nashua
Lake Whalum	Lunenburg/Leominster	Nashua
Manchaug Pond	Sutton/Douglas	Blackstone
Nabnasset Pond	Westford	Merrimack
Pillings Pond	Lynnfield	North Coastal
Pondville Pond	Auburn/Millbury	Blackstone
Ramshorn Pond	Millbury/Sutton	Blackstone
Red Bridge Impoundment	Wilbraham/Ludlow/Palmer	Chicopee
Sandy Pond	Ayer	Nashua
Singletary Pond	Millbury/Sutton	Blackstone
South Meadow Pond	Clinton/West Boylston	Nashua
Spectable Pond	Lancaster	Nashua
Stoneville Reservoir	Auburn	Blackstone
Wallum Lake	Douglas/Burrilville, R.I.	Blackstone
West Waushacum Pond	Sterling	Nashua
White Island Pond	Plymouth/Wareham	Buzzards Bay

1976-77 COMPLIANCE MONITORING ANNUAL REPORT

This office recently completed compliance monitoring for 1976-77. The program was curtailed considerably from the previous year due to man power shortages and time constraints.

The basic object of the program was to sample all treated discharges that were considered significant. Untreated discharges, cooling water discharges and insignificant minor discharges were not sampled. We attempted to get three consecutive 24-hour composites from all major treated discharges. For the most part, the program was completed successfully. The attached sheet gives a basin by basin breakdown of the program as it was completed.

At the present time we have 11 Isco samplers which are used for compliance monitoring. These are a significant improvement over our previous equipment and were essential for completing the program. Approximately 5 additional samplers should be purchased in order to ensure that this year's program can be completed.

The 77-78 compliance monitoring will be carried out with the same philosophy as the previous year. A number of new treatment facilities will be on line, so it is expected that approximately 170 major discharges will be sampled and that approximately 100 minor discharges will be sampled. The program was started in July, and a considerable number of discharges have already been sampled.

1976-77 COMPLIANCE MONITORING

BASIN	DATE	MAJOR	TOTAL	MINOR	TOTAL
North River	7/5-7/8	2	2	4	4
South Coastal	7/5-7/8	1	3	1	5
North Coastal	7/26-7/30	2	5	0	5
Taunton	8/2-8/5	14	19	0	5
Martha's Vineyard	8/16-8/19	0	19	1	6
South Coastal	9/7-9/10	0	19	2	8
French & Quinebaug	9/20-9/24	6	25	8	16
Taunton	9/20-9/24	0	25	6	22
Charles	9/27-9/30	8	33	3	25
Buzzards Bay	9/27-9/30	1	34	6	31
Connecticut	10/4-10/7	3	37	0	31
Deerfield	10/4-10/7	3	40	3	34
Millers	10/4-10/7	5	45	2	36
Blackstone	10/12-10/14	12	57	3	39
Ten Mile	10/12-10/14	26	83	0	39
SuAsCo	10/18-10/21	9	92	1	40
Westfield	10/18-10/21	5	97	1	41
Merrimack	10/25-10/28	0	97	1	42
Chicopee	10/25-10/28	7	104	2	44
Parker/Ipswich	10/25-10/28	1	105	2	46
SuAsCo	10/25-10/28	1	106	0	46
Neponset	11/1-11/4	1	107	3	49
Weymouth	11/1-11/4	1	108	4	53
Housatonic	11/8-11/10	1	109	0	53
Boston Harbor	11/8-11/10	2	111	0	53
Cape Cod	11/15-11/19	0	111	4	57
Merrimack	3/28-3/31	6	117	2	59
Connecticut	4/11-4/15	9	126	3	62
Housatonic	4/25-4/28	12	138	2	64
Millers	5/23-5/27	2	140	1	65
Blackstone	6/6-6/10	8	148	3	68
Hoosic	5/31-6/3	5	153	1	69
Nashua	6/20-6/24	7	160	6	75

BIOLOGICAL STUDIES

During fiscal year 1977 (FY 77) the Biological Section continued to sample selected major river basins in the state in order to collect valuable baseline data on the benthic macroinvertebrate community responses to water quality.

The basins sampled during FY 77 were the French and Quinebaug (1976) with 22 stations, the Blackstone (1977) with 22 stations, the Nashua (1977) with 15 stations. The data for these basins has not as yet been finalized, but are undergoing the processes of identification, compilation, and analysis.

In addition to the basins sampled in FY 77 the data from 90 stations sampled in the Taunton Basin during FY 76 are entering final analysis.

As part of the data analysis several interesting finds were made. Six leeches never reported before in the state were collected, verified, and sent to the Smithsonian Institution in Washington, D.C. Also, a new species of midge fly was discovered and named after a member of the staff. Such finds are not only personally rewarding but contribute to the advancement of water pollution biology.

RESEARCH AND THERMAL POLLUTION CONTROL

Research

In addition to those projects listed with the prefix 77- , the following new efforts were initiated:

Nutting Lake - Lake Restoration Program
In Service Training Program
Groundwater Study in the Upper Aberjona River
Disposal of Secondary Effluent in Wetlands
Grants to Municipalities for Operation of Water Pollution Control Facilities

Other activities included:

- Task Force on Application of Municipal Sludge to Agricultural Land - attending of approximately 8 meetings and writing a section in the final report
- Task Force on Composting - attending of approximately 5 meetings and contact with interested groups within the Commonwealth
- Presentation of a paper entitled "Power Generation: Effects on the Aquatic Environment in Massachusetts" at the Waste Heat Management and Utilization Conference, Miami, Florida
- Presentation of a paper entitled "Systematic Diurnal Curve Analysis" by John B. Erdmann at the New England Water Pollution Control Association meetings, Whitesfield, New Hampshire
- Background work on Erosion Control from Construction Activities

Thermal Pollution Control

Administrative - Technical Advisory Committee Meetings

Pilgrim Nuclear - approximately 4 (C. Watson)
Vermont Yankee - approximately 3 (W. Kimball)
Brayton Point - approximately 3 (R. Isaac)
Montague Plain - approximately 2 (R. Isaac)
Canal Electric - approximately 3 (C. Watson)

Permits and/or studies were reviewed for:

Brayton Point
Mystic Station
Canal Electric
Montague Plains
Salem Harbor
Pilgrim Nuclear
Vermont Yankee

RESEARCH AND DEMONSTRATION PROJECT STATUS

FISCAL YEAR 1978

PROJECT NUMBER	TITLE	CONSULTANT	COMPLETION DATE	DIVISION FUNDING	BALANCE
77-01	Studies of Lake Cochituate and Hagers Pond	U.S. Geological Survey Cooperative Effort	June 1979	50,000.	50,000.
77-02	Characterization of Solids Behavior in, and Variability Testing of Selected Control Techniques for Combined Sewer Systems	Northeastern University	April 1978	75,000.	75,000.
77-03	Ozonation of Wastewater for Disinfection	Metcalf & Eddy		48,400.	48,400.
77-04	Mathematical Modeling of Water Quality	Resource Analysis, Inc.		38,000.	38,000.
77-05	Installation and Evaluation of Porous Pavement at Walden Pond	Northeastern University and Warren Brothers	June 1979	120,000.	120,000. 67,900.
77-06	Feasibility Study for Establishing an Operator Training Facility	Fay, Spofford & Thorndike		5,000.	5,000.
77-07	Land Disposal of Secondary Effluent: II	Woods Hole Oceanographic Institution	June 1978	60,000.	60,000.
77-08	Morses Pond - Lake Restoration Preliminary Dredging	Carr Laboratories, Inc.	June 1979	72,000. 20,000.	72,000. 20,000.
		Total funds committed in FY 1977		$556,300.	

RESEARCH AND DEMONSTRATION PROJECT STATUS

FISCAL YEAR 1978 (CONTINUED)

PROJECT NUMBER	TITLE	CONSULTANT	COMPLETION DATE	DIVISION FUNDING	BALANCE
73-07(1)	Pilot Plant Investigations of Phosphorus and Nitrogen Control Strategies	University of Massachusetts	Completed	$172,000.	0
73-07(2)	Non-point Source Pollution	University of Massachusetts	Completed	94,000.	0
73-07(3)	Aspects of Sludge Handling and Disposal	University of Massachusetts	Completed	59,500.	0
74-03	Analyses of Nitrification In Rivers	Northeastern University	Completed	54,451.	2,368.
75-02	Cape Cod Groundwater Study, Phase II	U.S.G.S.	June 1980	180,000.	67,995.
75-04	Massachusetts Bay Pollutant Transport	New England Aquarium	Completed	70,000.	20,383.
75-06	High Energy Electron Irradiation	M.I.T.	October 1977	30,000.	16,193.
76-01	Septage Survey	Whitman & Howard	Completed	38,000.	467
76-02	Nutrient & Trace Organic Monitoring	Lawrence Experiment Station	June 1979	87,000.	2,500.
76-03	Pilot Project on Economic Environmental Input-Output Analysis	Regional Sciences Research Institute	Completed	8,000.	0

RESEARCH AND DEMONSTRATION PROJECT STATUS

FISCAL YEAR 1978 (CONTINUED)

PROJECT NUMBER	TITLE	CONSULTANT	COMPLETION DATE	DIVISION FUNDING	BALANCE
76-04	Land Disposal of Secondary Effluent (extension 73-06)	WHOI	Draft Report Under Review	$212,064.[1]	26,134.
76-05	Water Quality Improvements in the Boston Back Bay Fens Phase II (extension of 75-01)	C.E. Maguire	Completed	202,000.[2]	3,628.
76-06	Hazardous Waste Disposal	GCA/Technology Division	Completed	34,900.	0
76-07	Water Quality Monitoring	U.S.G.S.	Completed	50,000.	0
76-08	Study Response of Activated Sludge Wastewater Treatment Process to the Application of Septage	University of Lowell	March 1978	21,500.	21,500.
76-09	Feasibility Study on Relocation of the Advanced Waste Treatment Demonstration Plant to New Site at Marlborough, Massachusetts	Metcalf & Eddy, Inc.	Completed	6,000.	2,580.
76-01(1)	Pilot Plant Investigations of Wastewater Treatment	University of Massachusetts	June 1979	173,000.	100,176.
76-01(2)	Field Studies of Non-point Pollution Loadings	University of Massachusetts	June 1979	114,525.	66,316.
76-10	Assessment and Prediction of Improvement in Water Quality	University of Massachusetts	June 1979	65,425.	37,884.

[1] Increase of $36,445. over initial commitment
[2] Increase of $27,000. over initial commitment

MASSACHUSETTS DIVISION OF WATER POLLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-04

PROJECT TITLE:	Mathematical Modeling of Water Quality
INVESTIGATOR:	Resource Analysis, Inc.
LOCATION:	Cambridge and Westborough, Massachusetts
DESCRIPTION:	This project involves consulting services for mathematical modelling on an as-needed basis. The consultant will aid the Division of Water Pollution Control in keeping abreast of recent developments and aid in use of the four existing models which the Division employs in evaluating discharge requirements. Services include application of and field work relating to the existing models, state-of-the art advice, data analysis, computer use and soft ware services.
COST:	$38,500.
FUNDING:	$38,500. by Massachusetts Division of Water Pollution Control
DATE STARTED:	March 2, 1977
DATE TO BE COMPLETED:	September 2, 1978

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-10

PROJECT TITLE: Evaluation of Suspected Groundwater Contamination

INVESTIGATOR: Geotechnical Engineers, Inc.

LOCATION: Wilmington, Massachusetts

DESCRIPTION: The objectives of the project are to define groundwater movement in the vicinity of Stepan Chemical Corporation in Wilmington, Massachusetts in order to (1) determine whether past or present processes at Stepan are contaminating groundwater, and the degree of such contamination in its areal extent as well as its relation to surface water courses, and (2) recommend procedures for corrective action.

The major tasks of this project are to:

1. Install a series of observation wells on and adjacent to Stepan Chemical property.
2. Produce two water table contour maps, one done at a period of high water, the other at a period of low water, indicating horizontal subsurface flow patterns on the site.
3. Produce a geologic map with four cross-sections showing ground surface, and groundwater and bedrock elevations.
4. Produce a map showing the areal distribution of various chemical parameters in the groundwater and surface water sampling stations and to measure the surface water discharge.
5. Examine alternatives for controlling contamination, and provide preliminary cost estimates.

COST: $35,000.

FUNDING: $35,000. by Massachusetts Division of Water Pollution Control

DATE STARTED:

DATE TO BE COMPLETED:

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-09

PROJECT TITLE:	Restoration of Water Quality in Nutting Lake through Nutrient Management and Control
INVESTIGATOR:	Purcell and Taylor, P.C.
LOCATION:	Billerica, Massachusetts
DESCRIPTION:	The main objective of this project is to aid the Billerica Conservation Commission and the U.S. Environmental Protection Agency in an attempt to improve the water quality of Nutting Lake and assess the impacts of the restoration efforts.

The major tasks of the project include:

1. The design of a dredging program, including an estimation of the quality of the effluent from the dewatered dredge material and an examination of alternatives for its disposal.
2. Assessment of alternative spoil disposal, designing of the facility, and conducting a monitoring program of the spoils disposal operation.
3. Analysis of spoil material and its possible uses.
4. Conduct an evaluation of Nutting Lake's water quality before, during and after the restoration effort, including an assessment of septic tank and treatment systems with regard to their impact on the lake's water quality.

COST:	$322,000.
FUNDING:	$79,380. by Massachusetts Division of Water Pollution Control
DATE STARTED:	
DATE TO BE COMPLETED:	

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-08

PROJECT TITLE:	Morses Pond - Lake Restoration Demonstration and Evaluation
INVESTIGATOR:	Carr Research Laboratory, Inc.
LOCATION:	Wellesley, Massachusetts
DESCRIPTION:	The objective of the project is to conduct a restoration program for Morses Pond in the Town of Wellesley, Massachusetts. The tasks of the project will be to: 1. Evaluate the effectiveness of dredging through a water quality monitoring program and the monitoring of biological impact. 2. Assess the methods of handling the dredged sediment and alternatives for its disposal. 3. Determine the possibility of introducing more acceptable plants in place of those removed by dredging.
COST:	$617,480.
FUNDING:	$92,000. by Massachusetts Division of Water Pollution Control
DATE STARTED:	June 29, 1977
DATE TO BE COMPLETED:	June 29, 1979

Project cosponsored by the U.S. Environmental Protection Agency and the Town of Wellesley

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-07

PROJECT TITLE:	Cape Cod Wastewater Renovation and Retrieval System - II
INVESTIGATORY:	Woods Hole Oceanographic Institution
LOCATION:	Falmouth, Massachusetts
DESCRIPTION:	This project involves the continuation of a comprehensive groundwater monitoring program initiated under a project involving an experimental spray irrigation program conducted at Otis Air Force Base, Cape Cod, and the operation of a pilot plant. The ultimate objective is to evaluate alternative means of wastewater treatment and to develop design criteria for the recharge of water of potable quality to the groundwater reservoir. The specific tasks will be to: 1. Assess the overall mass balance of chemical elements in the receiving groundwater, and the achievement of steady-state conditions with increasing rate of application. 2. Spray irrigation of a fixed volume of effluent.
COST:	$179,248.
FUNDING:	$60,000. by Massachusetts Division of Water Pollution Control
DATE STARTED:	May 26, 1977
DATE TO BE COMPLETED:	May 26, 1978
	Project cosponsored by the U.S. Environmental Protection Agency

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-06

PROJECT TITLE: Wastewater Treatment Plant Operator Training Facility Feasibility Study

INVESTIGATOR: Fay, Spofford and Thorndike, Inc.

LOCATION: Central Massachusetts

DESCRIPTION: The objective of this project is to evaluate the feasibility of establishing a training center for wastewater treatment facility operators in Central Massachusetts. Three sites (Upper Blackstone, Marlborough-East, and Lowell University) will be given consideration.

The tasks of the study include:

1. Preparation of questions for consideration of sites and conferences with appropriate agencies.
2. Investigation of the three sites.
3. Discussion of legality of constructing such a facility on property of other governmental agencies, the selection of a site, conceptual design of the facility, and an estimation of construction, operation, and maintenance costs.

COST: $5,000.

FUNDING: $5,000. by Massachusetts Division of Water Pollution Control

DATE STARTED: April 14, 1977

DATE TO BE COMPLETED: October 14, 1977

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-05

PROJECT TITLE: Installation and Evaluation of Porous Pavement - Walden Pond Parking Area

INVESTIGATOR: Northeastern University

LOCATION: Concord, Massachusetts

DESCRIPTION: The objectives of this project are to design, install, monitor and evaluate the performance of porous pavement on an existing gravel parking lot. The experimental paving material is made from conventional asphalt paving materials and allows rain and melting snow to leak through, thus hopefully reducing or eliminating expensive storm drainage systems.

The major tasks of this study will be to prepare plans and specifications for installation of pavements and to monitor and evaluate the four different surfaces of the parking lot (total area 17,000 square yards). These are: standard pavement (about 30% of total area), porous pavement of two thicknesses - 2" and 4" (each covering about 30% of total area), and unpaved gravel (about 10% of area).

COST: $187,900.

FUNDING: $187,900. by Massachusetts Division of Water Pollution Control

DATE STARTED: April 5, 1977

DATE TO BE COMPLETED: May 1976

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-03

PROJECT TITLE: Ozone Demonstration Study - Electron Beam Accelerator

INVESTIGATOR: Metcalf and Eddy, Inc.

LOCATION: Marlborough, Massachusetts

DESCRIPTION: The objectives of this project are to demonstrate the effectiveness and practicality of the use of ozone, generated by an electron beam accelerator, as a wastewater disinfectant. The tasks of the project will involve preparation of site plans, design specifications, aid in the preparation of equipment leasing, equipment installation and system evaluation.

COST: $220,869.

FUNDING: $84,400. by the Massachusetts Division of Water Pollution Control

DATE STARTED: January 17, 1977

DATE TO BE COMPLETED: July 17, 1978

Project jointly sponsored by the National Science Foundation RANN Program and the U.S. Environmental Protection Agency

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-02

PROJECT TITLE: Characterization of Solids Behavior in, and Variability Testing of Selected Control Techniques for Combined Sewer Systems

INVESTIGATOR: Northeastern University

LOCATION: Boston, Massachusetts

DESCRIPTION: The objective of this project is to test the feasibility of applying varying flushing techniques for upstream settleable solids control as a potentially low cost, non-structural method of combined sewer overlow pollution abatement.

The major tasks will be to:

1. Conduct a field feasibility analysis of various selected flushing techniques, including assessments of solids removal and monitoring of pollution characteristics.
2. Select and conduct an operational testing program using both manual and automated means.
3. Develop flushing criteria and cost estimates for various flushing techniques and develop several operational flushing system designs.

COST: $243,164.

FUNDING: $75,000. by Massachusetts Division of Water Pollution Control

DATE STARTED: October 4, 1976

DATE TO BE COMPLETED: April 4, 1978

Project jointly sponsored by the U.S. Environmental Protection Agency

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 77-01

PROJECT TITLE: Nutrient Load Allocation and Assessment for Hager Pond and Lake Cochituate

INVESTIGATOR: United State Geological Survey

LOCATION: Marlborough, Massachusetts

DESCRIPTION: The main endeavor of the program at Hager Pond is a study of the effects of nutrient removal by the Marlborough Treatment Plant and the impact of other nutrient sources on Hager Pond and the downstream ponds in the Hop Brook drainage basin. A similar study is planned for Lake Cochituate in Framingham. The project will attempt to obtain sufficient information to provide direction for engineering solutions to the eutrophication problems and to assess non-point nutrient concentrations.

The tasks involve data collection, such as hydrologic measurements, algal growth potential, sediment analyses, plankton and chlorophyll analyses.

COST: $233,000.

FUNDING: $116,500. by Massachusetts Division of Water Pollution Control

DATE STARTED: June 1976

DATE TO BE COMPLETED: June 1979

Project jointly sponsored by U.S. Geological Survey

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL

RESEARCH AND DEMONSTRATION PROJECT NUMBER 76-19

PROJECT TITLE:	Study Response of Activated Sludge Wastewater Treatment Process to Application of Septage
INVESTIGATOR:	Dr. William B. Moeller, University of Lowell
DESCRIPTION:	The objectives of this project are to determine the effect of applications of septage to an activated sludge treatment plant using an 8000 gpd extended aeration plant at the University of Lowell. The project will attempt to determine the efficiency of such a process at various rates of feed of septage and identify the aspects of the treatment process which may be critical or limiting the treatment capability for processing the septage. The results will be verified by applying them to two full scale plants.
COST:	$21,507.28
FUNDING:	$21,507.28 by Massachusetts Division of Water Pollution Control
DATE STARTED:	March 1976
DATE TO BE COMPLETED:	September 1977

TRAINING SECTION - LOWELL - 1977 ANNUAL REPORT

Three Basic Programs were presented during the Fall of 1976 for each of the 3 Regions. The entire Program was presented at the University of Lowell - North Campus; and each 3-credit Program had 80 hours' contact time and was 16 weeks long. The following is a list of operators and supervisors who successfully completed the Program:

Course I (Basic Wastewater Treatment Plant Operations)
Eastern Region Fall 1976 Training Program

NAME	HOME ADDRESS	EMPLOYER
Benson, Gary	142 Shawmut Avenue Marlboro	Bay State Abrasives Westboro
Brett, Charles L.	148 Hobart Street Danvers	Nahant Department of Public Works
Brustas, Lewis G.	164 Cross Street Lowell	General Latex and Chemical Corporation, N. Billerica
Casparro, James L.	204 Appleton Street Lowell	
Colangelo, Stephen P.	2 Kingston Road Tewksbury	Colonial Drive Apartments Andover
Cusick, Harris A.	5 Brewster Road Wakefield	Camp, Dresser & McKee, Inc. Haverhill
Janvrin, Fred M.	5 Fifth Street Ipswich	Ipswich Wastewater Treatment Plant
Kavalchuck, Nicholas P., Jr.	9 Pinehill Road Maynard	Maynard Wastewater Treatment Plant
Lauziere, Norman A.	5 Ralph Street Lowell	M.C.I. - Concord
Leo, Leonard R., III	17 Marion Street Chelmsford	M.C.I. - Concord
MacLeod, Frederick R.	856 Boston Road Billerica	Billerica WWTP
Moir, Allan K.	11 Maple Street Upton	Upton WWTP

NAME	HOME ADDRESS	EMPLOYER
Richards, Earl J.	24 Turkey Shore Road Ipswich	Ipswich WWTP
Smith, Hershal F.	Langen Road South Lancaster	Atlantic Union College South Lancaster
St. George, Charles W., Jr.	29 Carroll Street Auburn	Auburn Sewer Department
Sczylvian, Stephen J.	12 Pershing Street Forge Village Westford	Hollingsworth & Vose West Groton
Vecchione, Guy W.	A Street East Douglas	
Volpini, Frank	2 Clifton Avenue Billerica	Billerica WWTP
Wallius, James A.	19 Forest Street Rockport	Rockport WWTP

Course I (Basic Wastewater Treatment Plant Operations)
Southeast Region Fall 1976 Training Program

NAME	HOME ADDRESS	EMPLOYER
Abbott, Robert T.	32 East Britannia Street Taunton	Taunton WWTP
Ballard, Franklin	174 North Main Street Mansfield	Mansfield WWTP
Ellis, Walton K.	163 Main Street Fairhaven	Town of Fairhaven
Feeney, Kenneth P.	845 Washington Street Norwood	Medfield WWTP
Gattozzi, Arthur	19 Court Street Milford	Milford WWTP
Horten, Jeremy W.	29 Walnut Street Abington	Town of Abington

NAME	HOME ADDRESS	EMPLOYER
Iafolla, Peter A.	15 Spring Street Medfield	Medfield WWTP
Jackson, Donald	44 Hunt Street Brockton	Brockton WWTP
Laurenza, John F.	12 Moody Avenue Everett	Everett Department of Public Work
MacGillivary, James	5 Paul Road Maynard	Maynard WWTP
Mainini, John	52 East Walnut Street Milford	Milford WWTP
Moroni, Leo E.	199 Forest Street West Bridgewater	Bridgewater Public Schools
Newton, Conrad B.	295 Rockland Street Brockton	Brockton WWTP
Nordin, Karl S., Jr.	77 Howard Street Rockland	Rockland WWTP
Pirozzi, James J.	54 Clifford Street Taunton	M.C.I. - Bridgewater
Resmini, Louis R.	118 Plymouth Street Bridgewater	Bridgewater WWTP
Ricahrd, Michael J.	216 Court Street Brockton	Brockton Sewer Department
Ruggiano, Ralph A.	175 Seekell Street East Taunton	Taunton WWTP
Ryan, John P.	3 Pine Street Kingston	Marshfield Engineering Department
Silvirea, Rudy, R.	36 East Main Street Middleboro	Middleboro WWTP
Sniger, John J.	26 Greenwood Street Abington	Town of Abington
Souto, Joseph	98 Spring Street Bridgewater	Bridgewater WWTP
Walker, Stephen G.	79 Chestnut Street Fairhaven	Town of Fairhaven

Course I (Basic Wastewater Treatment Plant Operations)
Western Region Fall 1976 Training Program

NAME	HOME ADDRESS	EMPLOYER
Bisaillon, Joseph	Hampton Manor Drive Northampton	Northampton WWTP
Brissette, George M.	118 Maple Street Greenfield	Greenfield WWTP
Carney, Robert	42 Daytona Street Springfield	Bondi Island WWTP Springfield
Cherry, Douglas T.	11 Clark Street Rochdale	Cherry VAlley and Rochdale Water District Cherry Vallay
Dawidjan, Ararat	264 Pearl Street Springfield	Bondi Island WWTP Springfield
Goodreau, Roger P.	80 Chestnut Street Southbridge	Southbridge WWTP
Grzyb, Louis C., Jr.	24 Chestnut Street Dudley	
Hills, Corey L.	34 Riverside Drive Auburn	Webster WWTP
Robert, Philip	March Avenue Webster	Webster WWTP
Urgiel, Rudolf F.	Munns Ferry Road Gill	Montague WWTP
Waugh, William A.	138 Summer Street North Brookfield	North Brookfield WWTP
Wilson, Robert F.	489 Main Street Cherry Valley	Oxford- Rochdale WWTP

There is no cost for personnel who attend the Program provided they work for the State or a municipality. Operators who work in the private sector can take the Program at no cost. However, if they wish to receive college credit from the University of Lowell, they must pay a fee of $66 per course.

The Spring 1977 Program was changed somewhat from previous courses in that additional information was added, and the operators in both the Basic and Advanced Programs have a minimum of 90 contract hours. Consequently, it was decided - after a meeting with the University officials - to offer both a lecture portion and lab course in the Basic Course and in the Advanced Traning Program. Operators who enrolled this spring received 6 credits provided they successfully completed each course. During the spring, the Basic Program was put on for the Eastern and Western Regions, and Advanced Courses were given for the Southeast and Western Regions. The following is a list of those who successfully completed the Spring 1977 courses.

Course I (Basic Wastewater Treatment Plant Operations
Wastewater Treatment Lab I)

Eastern Region Spring 1977 Basic Training Program

NAME	HOME ADDRESS	EMPLOYER
Bissett, Donald	50 Fuller Street Brockton	Brockton WWTP
Brown, Joseph	9 Park Lane Wayland	Wayland Highway Department
Buckland, Gerald	15 Lakeside Street Billerica	Letchworth Avenue WWTP Billerica
Conley, Francis	W. Hartford Avenue Uxbridge	
Frost, Donald	14 Parker Street Billerica	Billerica WWTP
Gillis, Dexter	6 Cottage Street Marblehead	South Essex Sewerage District Salem
Gravallese, Peter	14 Thurston Street East Boston	Boston Edison Company Charlestown
Gregg, Darryl	30 Little Farms Road Framingham	Town of Wayland
Hardiman, Donald	54 Turner Street Dedham	U.S. Gypsum Charlestown
Humphrey, Bruce	26 Lincoln Avenue Marblehead	South Essex Sewerage District Salem

NAME	HOME ADDRESS	EMPLOYER
Murphy, Kevin	360 Cambridge Street Burlington	U.S. Gypsum Charlestown

Western Region Spring 1977 Basic Training Program

NAME	HOME ADDRESS	EMPLOYER
Boucher, John	15 Strachan Street Millers Falls	Millers Falls WWTP, Erving
Brousseau, John	57 West Main Street Dudley	Webster WWTP
Hoynoski, Robert	24 Park Street Turners Falls	Montague WWTP
Turomsha, Peter	11 Williams Street Northampton	Northampton WWTP
Worpek, Daniel	157 Pleasant Street Easthampton	Easthampton WWTP

Course II (Advanced Wastewater Treatment Plant Operations
Wastewater Treatment Lab II)

NAME	HOME ADDRESS	EMPLOYER
Curley, Robert	707 E. Ashland Street Brockton	Brockton WWTP
Feeney, Kenneth	845 Washington Street Norwood	Medfield WWTP
Gattozzi, Arthur	19 Court Street Milford	Milford WWTP Hopedale
Hebard, William	191 Reservoir Street Norton	M.C.I. - Norfolk
Hicks, Stephen	488 Dailey Drive Franklin	Foxboro Company Foxboro
Iafolla, Peter	15 Spring Street Medfield	Medfield WWTP

NAME	HOME ADDRESS	EMPLOYER
Jackson, Donald	44 Hunt Street Brockton	Brockton WWTP
Laro, Ronald	42 Country Way Taunton	Taunton WWTP
Lopes, Arthur	121 Plain Street Taunton	Taunton WWTP
MacKay, James	62 Keith Avenue Brockton	Brockton WWTP
Mainini, John	52 E. Walnut Street Milford	Milford WWTP Hopedale
Martin, John	41 Elm Street Bellingham	Wrentham State School
Munies, James	82 Upland Road Brockton	Brockton WWTP
Newton, Conrad	295 Rockland Street Brockton	Brockton WWTP
Nordin, Karl S., Jr.	77 Howard Street Rockland	Rockland WWTP
Ott, Charles R., Jr.	P.O. Box 32 398 Cedar Street Chatham	Chatham WWTP
Slater, Joseph F., Jr.	15 Ermine Road Scituate	Scituate WWTP
Smith, William	703 Somerset Avenue Taunton	Taunton WWTP
Souto, Joseph	98 Spring Street Bridgewater	Bridgewater WWTP
Teceno, Frederick	588 Wareham Street Middleboro	The Foxboro Company East Bridgewater
Theriault, John	191 Fisher Street North Attleboro	Wrentham State School

Western Region Spring 1977 Advanced Training Program

NAME	HOME ADDRESS	EMPLOYER
Bielawski, Julian	11 Pine Street Dudley	Webster WWTP
Collett, Thomas	High Road Gilbertville	Hardwick WWTP
Cutter, Ralph	277 Newsherborn Road Athol	Athol WWTP
Dawidjan, Ararat	264 Pearl Street Springfield	Bondi Island WWTP Springfield
Gobi, Richard	19 High Street Spencer	Spencer WWTP
Hogerheide, Robert	Box 44 Wendell Depot	Millers Falls WWTP Erving
Juskalian, Andrew	Green Avenue Belchertown	Belchertown State School
Newton, Thomas	2B Franklin Street Easthampton	Easthampton WWTP
Shilinsky, Kenneth	13 Central Avenue Dudley	Webster WWTP
Snelling, Ed	Ward Street North Brookfield	North Brookfield WWTP
Urgiel, Rudolf	Munns Ferry Road Gill	Montague WWTP

In addition to this formal part of our Training Program, a one-day Seminar on the Total Organic Carbon Analyzer was given on February 17 by Dohrmann Division, Envirotech Corporation. Over 100 operators and supervisory personnel from throughout New England attended this session. In conjunction with the New England Interstate Water Pollution Control Commission, 4 Seminars on Pump Operation and Maintenance were presented as part of our Spring Training Program during the month of April. Approximately 100 operators from Massachusetts attended these one-day sessions. The following are outlines of both Basic Courses and the 2 courses in our Advanced Program. These were all revised this spring to meet the desires and wishes of the operators in the Commonwealth.

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL TRAINING SECTION
ROOM B-215 A - UNIVERSITY OF LOWELL - NORTH CAMPUS
LOWELL, MASSACHUSETTS 01854 (459-7193)

BASIC WASTEWATER TREATMENT PLANT OPERATIONS - COURSE I

CE 25.87 (Day Program) Don Pottle

This 10 session (45 hour) program, a 3-credit college course, will follow the outline given below. In addition, homework will be given at each session and will be collected at the beginning of the next class. The homework will count 20% of the grade and the 2 examinations given approximately at the third and sixth sessions will count 20% each. The final exam will be worth 40%. Visitations to various treatment plants in the area will be worked into the program provided it meets with the mutual agreement of everyone in the class.

Please note the lectures will be given at the University of Lowell and will be approximately 4½ hours in length.

SESSION	SUBJECT	DESCRIPTION
1	Preliminary Treatment	Composition of wastewater Flow rates - Definitions Sampling techniques - Screening Grit removal-Comminution Flow measurement
2	Primary Treatment	Purposes and types of clarifiers-Detention times - Overflow rates-Scum & grease removal - Sludge pumping - Imhoff tanks - pH control Automatic samplers
3	Chlorination Quiz #1	Uses of chlorine-Chlorine hazards Safety-Operation & Maintenance chlorinators
4	field Trip	Primary Plant Visitation-Practical exercise in proper use of self-contained breathing apparatus
5	Trickling Filters	High rate filters-Organic loading Hydraulic loading-Operational problems
	Activated Sludge	Conv. activated sludge-DO requirements-Mechanical aeration-Diffused aeration

SESSION	SUBJECT	DESCRIPTION
6	Conventional Act. Sludge	Operational controls & problems SVI, sludge age, bulking, rising sludge
	Quiz #2	
7	Activated Sludge	F/M ratio-Sludge wasting calcs. Cell residence time Variations in activated sludge processes-Sand filtration
8	Field Trip	Secondary Plant Visitation-DO uptakes
9	Sludge Treatment	Anaerobic & Aerobic Digestion-Lagoons-Drying beds-Vacuum filters Centrifuges-Incineration
10	Reports-Safety-Eutrophication	
	Quiz #3	

The following manuals will be used in the course:

1. "Manual of Instruction for Sewage Treatment Plant Operators", New York State Department of Health
2. "Operation of Wastewater Treatment Plants", Water Pollution Control Federation-Manual of Practice #11
3. "Simplified Laboratory Procedures for Wastewater Examination", Water Pollution Control Federation Publication #18, 1971

Numerous handouts will be utilized throughout the course.

25.87 is designed to be taught concurrently with the basic lab course 25.89.

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL TRAINING SECTION
ROOM B-215 A - UNIVERSITY OF LOWELL - NORTH CAMPUS
LOWELL, MASSACHUSETTS 01854 (459-7193)

WASTEWATER TREATMENT LAB I

CE 25.89 (Day Program) Don Pottle & Brian Kelleher

This 10 session (45 hour) program, a 3-credit college course, will follow the outline given below. In addition, homework will be given at each session and will be collected at the beginning of the next class. The homework will count 20% of the grade and the 2 examinations given approximately at the third and sixth sessions will count 20% each. The final exam will be worth 40%. Visitations to various treatment plants in the area will be worked into the program provided it meets with the mutual agreement of everyone in the class.

Please note the laboratory classes, which will be given at the University of Lowell, will be approximately 5 hours in length. Operators are required to bring in samples from their own plants so the laboratory determinations can be more meaningful.

SESSION	SUBJECTS	SAMPLES
1	Lab Orientation Safety Metric System	None
2	Solids Determinations Settleable Solids- Suspended Solids Total & Dissolved Solids (Volatile, Non Volatile)	Raw influent Final effluent
3	pH-Turbidity-Chlorine Residual	Raw influent Final effluent
	Exam #1	
4	Winkler D.O. BOD	Raw influent Final effluent
5	BOD Mixed Liquor S.S. Settleability Centrifuge	Mixed Liquor
6	Alkalinity-Acidity	Raw influent Final effluent
	Exam #2	
7	Microscopy Sludge Solids	Mixed Liquor Return sludge Dewatered sludge Digested sludge
8	Volatile Acids Total Coliform	Anaerobicly Digested Sludge Raw influent Final effluent
9	Treatment Plant Visitation-sampling techniques & lab use	
10	Sludge Conditioning Final Exam	Primary Sludge Thickened sludge

The following manual will be used in the course:

"Simplified Laboratory Procedures for Wastewater Examination", Water Pollution Control Federation Publication #18, 1971.

Numerous handouts and work sheets will be provided for the various lab tests.

Lab procedures will be in accordance with Standard Methods for the Examination of Water and Wastewater, 14th Edition.

25.89 is designed to be taught concurrently with Basic Wastewater Treatment Plant Operations (25.87).

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL TRAINING SECTION
ROOM B-215 A - UNIVERSITY OF LOWELL - NORTH CAMPUS
LOWELL, MASSACHUSETTS 01854 (459-7193)

ADVANCED WASTEWATER TREATMENT PLANT OPERATIONS - COURSE II

CE 25.88 (Day Program) Don Pottle

This 10 session (45 hour) program is a 3-credit college course. Homework (20% of the grade) will be given at each session and will be collected at the beginning of the next class. The 2 examinations given approximately at the fourth and sixth sessions will count 20% each; the final exam, 40%. Treatment plants in the area will be visited provided it meets with the mutual agreement of everyone on the class. The lectures (about 4½ hours long) will be given at the University of Lowell.

SESSION	SUBJECT	DESCRIPTION
1	Review Biological Treatment	Sludge Age-Cell residence time-F/M ratio-Sludge wasting-Use of nomographs
2	Conv. Activated Sludge Process Control by "West" Method	SSC, SSV Use of centrifuge & settleometer
3	Conv. Activated Sludge Process	ATC, WCR-Sludge units in Secondary Control by "West" Method System-Use of trent charts
4	Conv. Activated Sludge Process Control by "West" Method Quiz #1	Sludge wasting-Sludge age
5	Field Trip	Visit to activated sludge plant & demonstration of "West" Method of process control

SESSION	SUBJECT	DESCRIPTION
6	Advanced Wastewater Treatment	Phosphorus removal-Carbon adsorptionTwo stage activated sludge-Nitrification-Denitrification
7	Field Trip	Visitation to an advanced wastewater treatment facility
8	Advanced Wastewater Treatment & Safety	Physical chemical treatment
	Quiz #3	
9	Industrial Waste Treatment & Sludge disposal	Neutralization-Cyanide & chrome treatment-Sludge dewatering
10	Review	
	Quiz #3	

MANUALS TO BE USED:

Bring in manuals and notes from Course I. (These include:

1. "Manual of Instruction for Sewage Treatment Plant Operators", New York State Department of Health
2. "Operation of Wastewater Treatment Plants", Water Pollution Control Federation-Manual of Practice #11
3. "Simplified Laboratory Procedures for Wastewater Examination", Water Pollution Control Federation Publication #18, 1971)

Various booklets will be given out on the West Method; and numerous notes, nomographs, and graphs will be given in addition to other prepared handouts.

25.88 is designed to be taught concurrently with the advanced lab course 25.90.

MASSACHUSETTS DIVISION OF WATER POLLUTION CONTROL TRAINING SECTION
ROOM B-215 A - UNIVERSITY OF LOWELL - NORTH CAMPUS
LOWELL, MASSACHUSETTS 01854 (459-7193)

WASTEWATER TREATMENT LAB II

CE 25.90 (Day Program) Don Pottle & Brian Kelleher

This 10 session (45 hour) program is a 3-credit college course. Homework (20% of the grade) will be given at each session and will be collected at the beginning of the next class. The 2 examinations given approximately at the third and sixth sessions will count 20% each;

the final exam, 40%. Treatment plants in the area will be visited provided it meets with the mutual agreement of everyone on the class. The labs (about 5 hours long) will be given at the University of Lowell. For more meaningful laboratory determinations, operators will be required to bring samples from their plants.

SESSION	SUBJECTS	SAMPLES
1	Review TS-SS-pH-Winkler D.O. - MLSS Safety	Mixed Liquor Raw influent Final effluent
2	Standard Solutions Alkalinity-Acidity Chlorides	Tap water Raw influent Final effluent
3	West Method Analysis (Settleometer, Centrifuge, Turbidity)	Mixed liquor Return Sludge Secondary effluent
	Exam#1	
4	Phosphorus	Receiving water Raw influent Final effluent
5	Jar Test DO uptake	None
6	Final Coliform-Chlorine Residual	Raw influent Final effluent
	Exam #2	
7	Nitrification (Ammonia N, Total N, Nitrates)	Raw influent
8	Treatment Plant Visitation - sampling techniques & lab use	
9	BOD-COD	Raw influent Final effluent
10	BOD-TOC	Raw influent Final effluent
	Final Exam	

MANUALS TO BE USED:

Bring in manuals and notes from Course I. (These include:

1. "Manual of Instruction for Sewage Treatment Plant Operators", New York State Department of Health
2. "Operation of Wastewater Treatment Plants", Water Pollution Control Federation - Manual of Practice #11
3. "Simplified Laboratory Procedures for Wastewater Examination" Water Pollution Control Federation Publication #18, 1971)

Various handouts and work sheets will be provided for the lab determinations.

Lab procedures will be in accordance with Standard Methods for the Examination of Water & Wastewater, 14th Edition.

25.90 is designed to be taught concurrently with Advanced Wastewater Treatment Plant Operations (25.88).

WESTERN REGIONAL OFFICE

The Western Regional Office is located at Draper Hall on the Amherst Campus of the University of Massachusetts and serves the four Western counties together with one-half of Worcester county's communities (a total of 129 cities and towns). This Region encompasses the basins of the Hudson, Housatonic, Thames, and Connecticut Rivers.

The office is staffed by the Regional Engineer, a Principal Engineer, a Senior Resource Planner, four Junior Engineers and two Natural Resource Officers. Administrative and clerical work is accomplished by one Senior Clerk-Stenographer.

The success of the Massachusetts Clean Waters Act acting with Federal Public Law 92-500 has been shown this year by the stocking of trout by the Division of Fisheries & Wildlife in the lower reaches of the Westfield for the first time. The Connecticut River above the Holyoke Dam has been put to greater recreational use. This past year there has been "Bass Derbies", a Women's Rowing Regatta and Sailraces together with an increase in other boating activities along this reach.

The Chicopee River showed marked improvement,a condition which will continue with the elimination of major industrial wastes discharges and the construction of Palmer-Monson Waste Treatment facility.

The Millers River is now in the process of being returned to its status as a trout fishery with the construction and completion of Municipal-industrial waste treatment facilities along its entire length.

Some twenty new pollution control projects involving industrial wastes, oil spills etc. were opened by the Regional office. As usual many one-time or short term investigations were accomplished and were handled informally.

Operation and Maintenance

The three men in this section made a total of 737 inspections of waste treatment facilities approximately the same number as the previous year. The policy of more plant time per inspection was continued from the previous year. The work load associated with the NPDES Permit program that was taken over last year by this section has been increased in that the complete review of all self monitoring data is reviewed by this section as well as recommendation for legal action against permittees. This section also assists the Westboro Water Quality Section in compliance monitoring samplings within the regional boundaries.

During the course of the year six new municipal and one industrial plant started operation. Four of the new municipal plants replaced seven existing facilities. Three municipal wastewater treatment plants are under construction, one of the municipal plants will probably go into operation this coming fiscal year.

This section has coordinated with the E.P.A.'s Operation and Maintenance group in providing information and assistance on that group's inspection of twenty-four municipal wastewater treatment facilities. The same type of coordination has been continued with the E.P.A. permit section. Fifteen NPDES permittees were visited. The Principal Sanitary Engineer heading this section attended the monthly Board of Certification meetings together with the Regional Engineer. These same individuals have proctored the examinations given by the Board of Certification twice annually. This section has also assumed responsibilities of the review courses for Grades 1 thru 4 for FY 1977 only.

This section participated in a one month joint technical assistance program with the Operation and Maintenance Section of E.P.A. Region I for the town of Easthampton Waste Treatment facility. The program was successful in bringing the plants effluent to better than their limitation in a matter of two days. The odor problems generated by the sludge lagoons, which had caused considerable "citizen participation" were reducted on a temporary basis and recommendation for more permanent solutions were made. These were implemented in the summer of 1977 and brought the situation under control.

During the past year this section has provided advice and guidance to both the municipal and industrial sector on compliance with their respective NPDES permits. In addition, the section has provided information and assistance to the Central office in matters concerning NPDES permits. Since the spring of 76 it has become routine policy for either the Regional Engineer or the Principal Sanitary Engineer of this section to attend the monthly NPDES permit meetings with the E.P.A. when a Regional problem exists.

Oil and Hazardous Wastes

Hazardous Wastes

The work that was done on hazardous waste collection and disposal has been in the following areas:

1. Licensing and Licensee Investigations

   The total number of investigations was 7

   The total number of inspections was 17

2. Meetings with Firms Concerning the Disposal of Hazardous Wastes

   The total number of meetings was 29.

3. Hazardous Materials Spills and Accidental Discharges

   The total number of spills investigated was 16.

Oil Spills and Oil Spill Prevention

Oil Spills

The total number of oil spills investigated was 48. Of these 8 were not recoverable.

Oil Spill Prevention

The total number of investigations and inspections concerning oil spill prevention was 117. These included inspections of oil storage facilities for proper diking, for for spillage if any had occured, and for proper operation of separators. Also included are investigations concerning spill prevention which at times were made in conjunction with the Federal SPCC planning.

Fish Kills

The number of fish kills investigated and confirmed was 7. The cause of the kills were due to oxygen depletion, caustics, calcium carbonate, and possible herbicide spraying.

Planner Oversite

One Senior Planner has been assigned to the Western Regional Office for three consecutive years. During this time the duties and responsibilities of the position have grown to take on various activities both within and without the planning field as follows:

Chapter 21 Section 27, General Laws of the Commonwealth

Efforts performed under this title are carried out on an "ad-hoc" basis. Local community officials, civic action groups and environmental associations such as the Connecticut River Watershed Council may request various forms of technical assistance or information. The Senior Planner is charged with following through on such tasks.

Special Projects

From time to time as the work load of the office warrants it, the Senior Planner is expected to be able to respond to a variety of situations from oil spills and fish kills to local water quality complaints. The Senior Planner also represents the

Regional Engineer at many functions and/or assists others within the office with their work tasks.

NPDES Permits Program

Work performed for this program consists of permit review and comment, municipal and industrial compliance monitoring and oversite of self-monitoring reports.

Areawide Wastewater Management Planning

This work is broken into two major catagories; designated planning and non-designated planning. For the ongoing designated planning programs the Senior Planner has been responsible for output review, technical assistance, liason between the planning agency and DWPC/DEQE, EPA and the local cities and towns, participation on advisory committees and program guidance.

In the new field of non-designated planning the Senior Planner has been called upon for technical assistance in the preparation of work programs for two planning agencies.

SOUTHEAST REGIONAL OFFICE

The Southeast Regional Office is located the the junction of Routes 53 and 14 in Pembroke. It serves communities throughout counties of Dukes, Nantucket, Barnstable, Plymouth, Bristol, and portions of Norfolk County. Various river basins within the region include the Charles, Ten Mile, Upper Neponset, Taunton River, North River, as well as South Coastal Waters. The total population of this area is over one million and includes major population areas as New Bedford, Fall River, Brockton and Taunton. The office is staffed by four engineers, one planner, one secretary and one NRO.

The office is responsible for investigations of complaints, waste surveys, supervising of waste treatment facilities and coordination with various municipal and regional authorities regarding pollution abatement projects. During fiscal year 1977 the following projects were processed by this office:

Municipal Wastewater Treatment Plant O & M Inspections	135
Municipal Wastewater Treatment Plant Effluent Discharge Monitoring	26
Industrial Wastewater Treatment Plant O & M Inspections	62
Industrial Wastewater Treatment Plant Effluent Discharge Monitoring	37
Pollution Control Inspections	187
Oil Spill Investigations	299
Meetings, Hearings, Speaking Engagements	234
Court Appearances	8
Planning and Report Review	120
Oil Terminal and Distributor Examinations	55
Hazardous Waste Investigations	77
Fish Kills	9
Water Quality Sampling and Stream Flow	47

Assistance has been given to the Department of Community Affairs, Executive Office of Environmental Affairs, Executive Office of Transportation and Construction, U.S. Environmental Protection Agency, Local Boards of Health, Conservation Commissions, Planning Agencies and engineering divisions in the field of pollution abatement.

The Federal Water Pollution Control Act Amendments of 1972 has placed a heavy additional work load upon the Regional Office in the areas of water quality monitoring, operation, and maintenance inspections, enforcement, and regional planning.

Oil pollution control and abatement inspections consumed a major portion of the workload of regional personnel in particular the "Argo Merchant" and "Bouchard Barge 65" spills.

EASTERN REGIONAL OFFICE

The Eastern Regional Office is staffed by five engineers one Natural Resources Officer and one secretary. The region includes some 127 Municipalities and the following river basins: Assabet, Boston Harbor, Blackstone, Concord, Charles (lower), Ipswich, Merrimack, Mystic, Nashua, Neponset (lower), North Coastal, Parker, Sudbury, Weymouth (Fore & Back), and Weir.

During FY 1977 the following activities were completed:

Wastewater Treatment Facility Inspections	290
Pollution Complaint Investigations	148
Oil Spill/Complaint Investigations	262
Meetings, Hearings, Public Speaking Engagements	47
Plan, Permit and/or Sewer Extension Review	17
NPDES Compliance Monitoring Inspections	286
Marine Oil Terminal Licensing/Inspections	62
Court Appearances	10

Due to the increase in staffing in the central office, the Eastern Regional Office will be moved out of the main office and to another location, preferably in Boston. This move will in many ways alleviate confusion with central office procedures and business and allow the Eastern Office to function as do the other two Regional Offices.

A new system has been initiated in the Eastern Region regarding work assignments. Each engineer is now given a work schedule for each month. Included in these schedules are NPDES Permit Inspections, Hazardous Waste Inspections, WWTF Inspections, Oil Spill Site Inspections, Compliance Monitoring and Marine Oil Terminal Licensing/Inspections. Oil Spills and other emergencies naturally take precedence but the remainder of the schedule is completed.

The reconaissance inspection which has been and will be a major portion of the work done in the region is no longer credited to the Division by the EPA. The region will continue to conduct these walk through inspections as this is really the only way to isolate problems and evaluate operation of the Wastewater Treatment Facilities.

The oil spills handled by the region this year appear to be more difficult not only in time spent but in detection. In January and February this office had 55 ongoing spills at the same time which severely hampered other functions. In conjunction with oil spills the capability of the laboratory to identify oils and other hazardous materials is severely limited.

The region participated in an investigation of hazardous wastes being discharged into the Merrimack River and after two days investigation it was traced to a small plant on the Nashua River. The material which has still not been completely identified was entering the water treatment plants via the Merrimack River and causing severe odor and taste problems. The analysis of the samples collected were run at the EPA laboratory. In the future more of these types of problems will arise and this Division is grossly prepared to handle such situations both from the technical and analytical standpoints.